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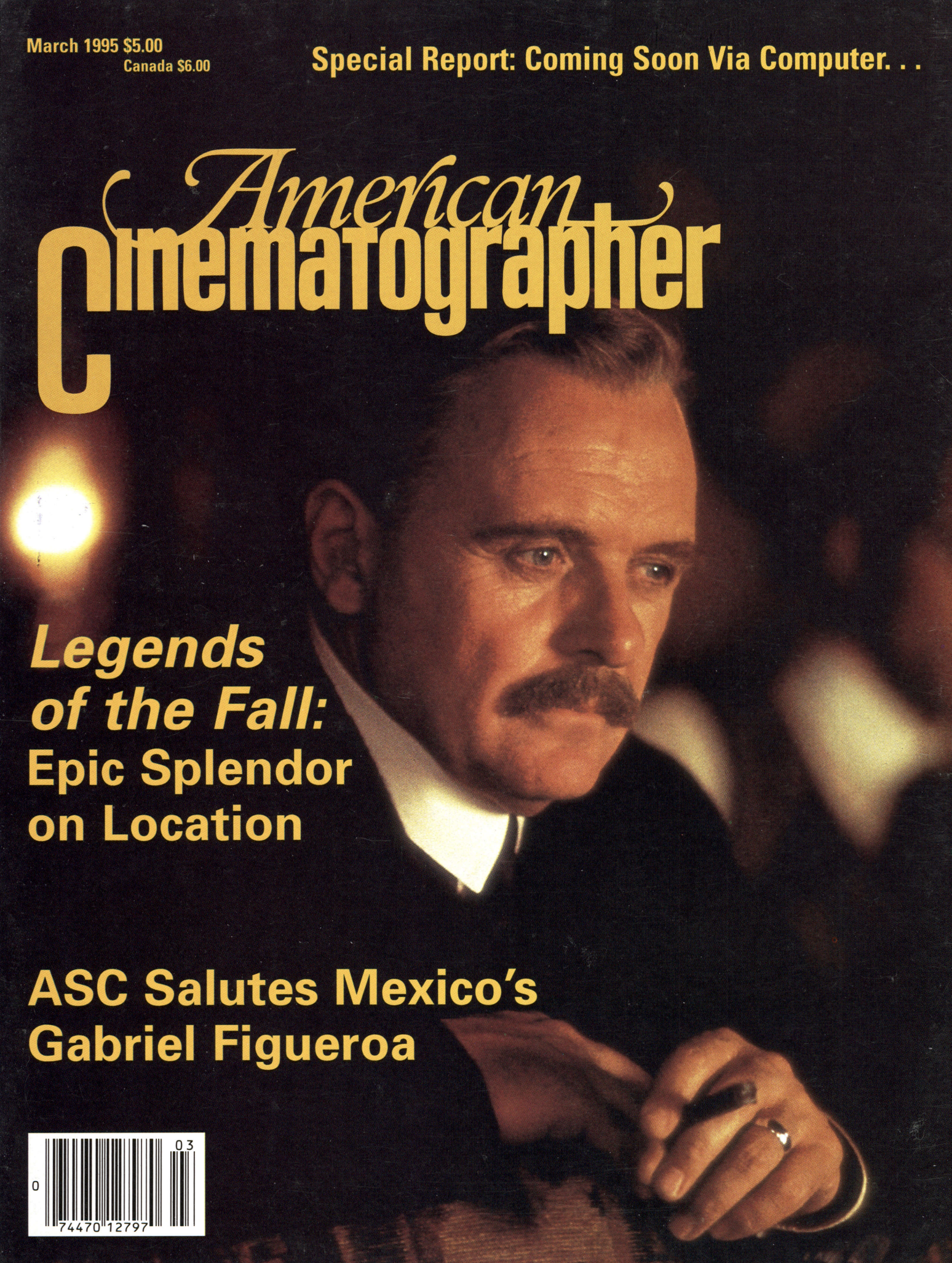

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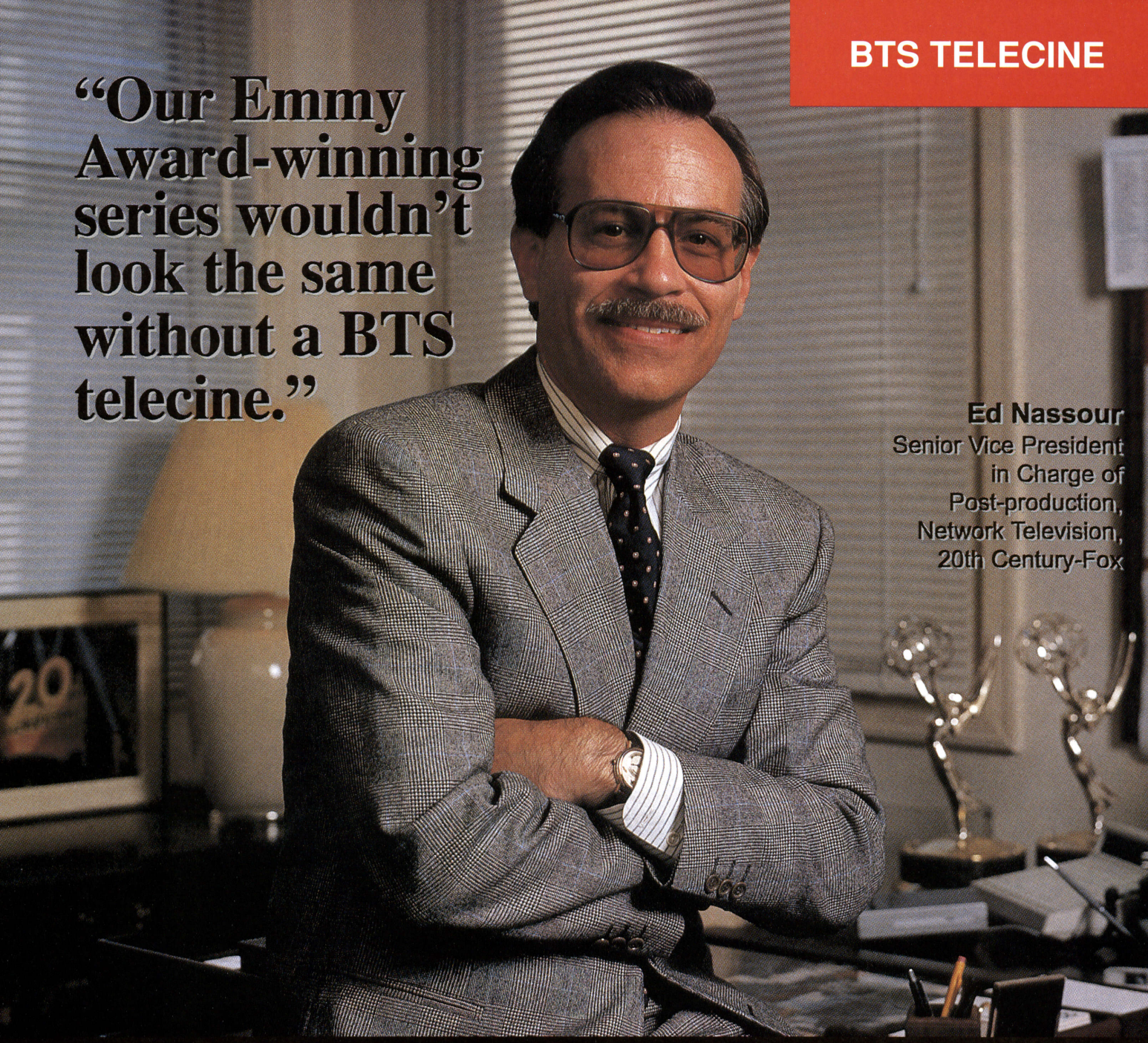

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March 1995 Vol. 76 No. 3

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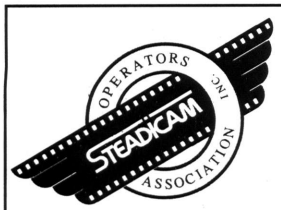
On Our Cover: Low-key lighting fashioned by cinematographer John Toll adds ambience to the pensive mood of Colonel William Ludlow (Anthony Hopkins) as he ponders the futures of his three sons in *Legends of the Fall* (photo by Kerry Hayes).

Contributing Authors:
Frank Beacham, Tom Dey, Bob Fisher, Ron Magid



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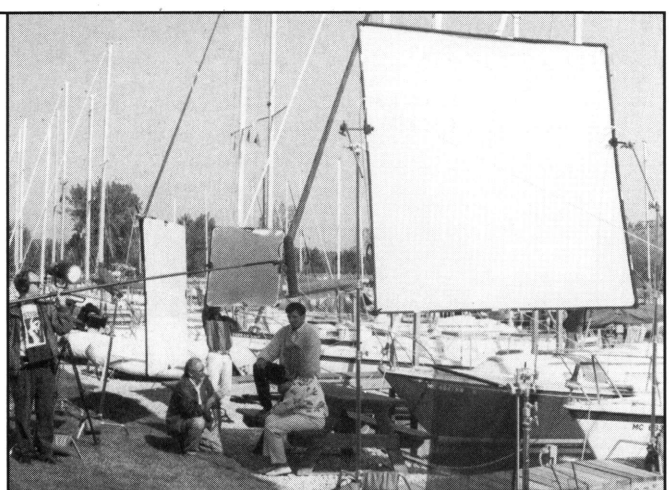

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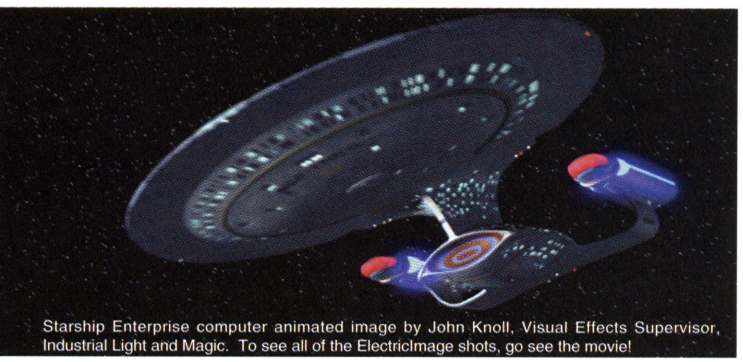
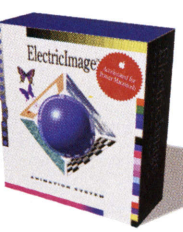


Starship Enterprise computer animated image by John Knoll, Visual Effects Supervisor, Industrial Light and Magic. To see all of the ElectricImage shots, go see the movie!



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Theo Van de Sande ASC shot A/B comparison test footage with six types of anamorphic lens. Here is what he found:

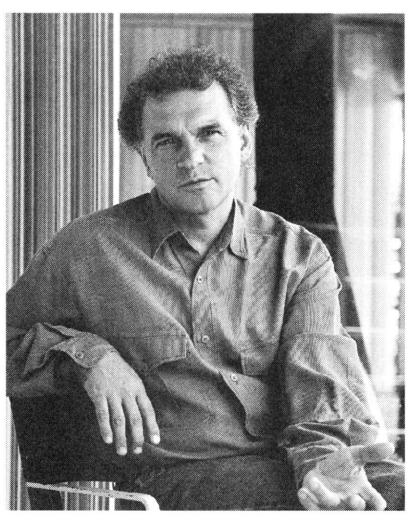
"Of the thirty-six features I've worked on as DP, three have been anamorphic," says Theo Van de Sande. "The latest is ***Tenderfoots***, to be released by Fox."

Lens shortage

"For about five years, there has been a shortage of anamorphic lenses. And new ones have been coming out–Arriscopes and Clairmonts, the Angenieux and Cooke zooms anamorphed by Clairmont. So I decided to shoot some tests. It's useful to know what the various alternatives are, how they perform."

Headlights

"I remember a night exterior in which a series of approaching headlights on high beam shone directly into the anamorphic lens. It was a wrong-way chase scene, the camera car weaving between oncoming traffic. As each set of headlights came at us, the flare created linear streaks right across the frame. The Director loved it–a more aggressive effect than the concentric flare rings you'd get with sphericals."



Star Test

"For that shot, streaks had worked. For most, they probably wouldn't. To compare the six available types of anamorphic lens, I set up a point-source star test. Projecting the test footage, it was clear that the Arriscopes produced no streaking at any stop. Wide open, the Cooke 40-400mm showed a small amount. So did Clairmont's own anamorphic lenses, but less than the lens types I had shot the high-beam headlights with. Two stops down, there was virtually no difference in streaking among any of them."

Hot streaks?

"Soon after that test, I made some long shots at dusk of a huge oil refinery, lit by hundreds of extremely bright lights, much hotter than the ambient daylight. The refinery was too big to balance, but streaks from all those point sources would have looked very strange. In fact, I used Arriscopes and there were no streaks."

A/B Test

"Stopping down cures streaking but not distortion or breathing, of course. To test for those, I shot A/B footage, again with the five types of anamorphic fixed lens and with the Cooke 5 to 1 anamorphed by Clairmont. I also projection-tested five of the six and put them on the bench at two rental houses."

Zoom edge

"One surprise for me was that the Cooke showed no edge distortion at its wide end, despite being a zoom. At 40mm, the Cooke drew a straight line better than several of the 40mm fixed lenses, but not as good as the Arriscope 40mm."

Circles/Ovals

"The other surprise was that the Cooke didn't distort the center of the image when I racked

Theo Van de Sande's credits as Director of Photography include Once Around, Crossing Delancy, Miracle Mile, Wayne's World and The Assault, which won both a Golden Globe and a 1986 Academy Award for Best Foreign Film.

focus, despite being a modified spherical zoom! The only other lenses that *didn't* change image shapes in the center of the screen were the Arriscopes. With all the other fixed lenses I tested, a center-screen circle became an oval as it went out of focus. Some lenses made horizontal ovals, others made vertical ovals."

Distortion

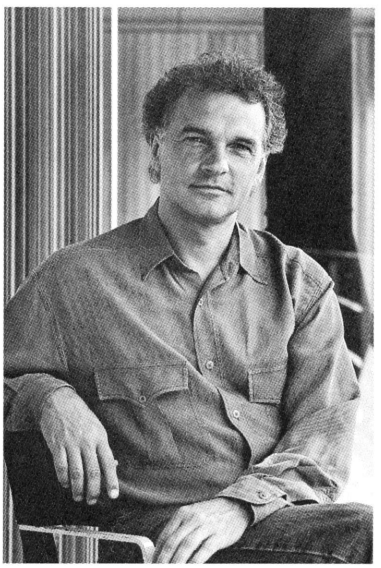
"Like the streaking, this center distortion was more pronounced in some of the fixed lenses. In two types, it was very noticeable. In two others (including the Clairmonts), it was less so. With the Cooke and the Arriscopes, I couldn't see it in the test footage. When I put the Arriscopes on the projector, I still couldn't see it."

Breathing

"The Arriscopes didn't distort, but they *did* breathe. Every lens does that to some degree, including every spherical–it's just more noticeable with some anamorphics. My test footage of focus changes on still subjects showed the Arriscopes changing image size more than any of the others."

Size or shape?

"But the Arriscopes were still my first choice. I was more bothered by test objects in center screen changing shape than by their changing size. I've found that whenever focus shifts substantially it's because the action moves or someone in the foreground turns around, that kind of thing. The movement masks the focus change and the size change–or it can be *made* to mask them."



Theo Van de Sande

Tradeoff?

"I suppose I'm used to seeing subtle size changes on screen–tracking and unobtrusive zooming. And in real life, things change size with distance. But they don't change *shape* in real life, or in center frame through sphericals. Arriscope circles got bigger, but they were still circles. If more breathing was their design tradeoff for no distortion, I think they made the right choice."

Orientable

"On *Tenderfoots*, our first unit had two Moviecam Compacts and an ARRI 3. Our second unit used two ARRI 3s all the time, sometimes as many as five. Clairmont ARRI 3s have bright, orientable anamorphic finders. That's one of the three reasons I went with Clairmont once again: their expertise with Arriflex and Moviecam and now with anamorphic."

Availability

"My second reason was the lens choice and lens availability (not the same thing) at Clairmont. There's a big selection there, including some zooms and long anamorphics you can't find anywhere else. And they had enough of them to equip all our cameras. And if they said we could have a certain lens, I knew we'd get it."

Choices

"Their anamorphic Angenieux 10 to 1 was excellent, even wide open. From T4 on down, the Clairmont anamorphics gave us Steadicam shots as sharp as our Arriscope footage. Not quite as distortion-free, but they cost us about half as much to rent and they weighed four or five times less."

Discuss

"My third reason for going with Clairmont, then and now," says Mr. Van de Sande, "Is that I can discuss things with Denny and Terry *as filmmakers*."

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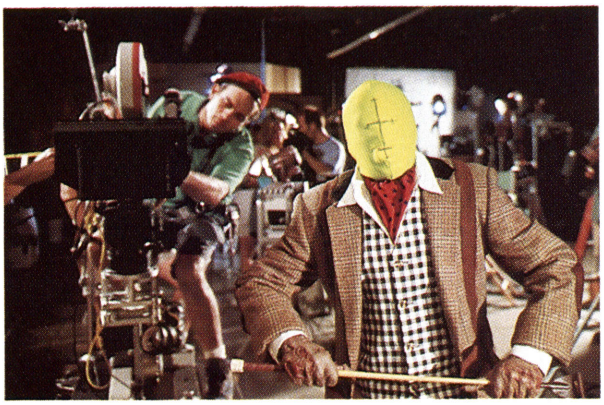

The creation of a live-action Crypt Keeper for the film* Demon Knight *involved several stages.* Clockwise from upper left: *a body double sports a green-screen hood to facilitate the matting process; a blue-screen puppet of the Crypt Keeper's head; the digital composite of body double and head.

Film clips courtesy of Available Light

A CGI Crypt Keeper

After five years on HBO, *Tales from the Crypt,* now in syndication, is a ratings monster. Some portion of the show's popularity can be credited to its infamous icon, the Crypt Keeper. Articulate and charismatic, the graveyard host is the work of a handful of talented artists and puppeteers.

For *Demon Knight*, the first of the *Tales from the Crypt* feature-film trilogy, the producers wanted to break the boundaries of traditional puppeteering and adapt the Crypt Keeper to the big screen. To demonstrate that there was more to the fellow than rubber, cables and rods, they needed a convincing walking, talking host without compromising the now-sacred image of the original.

Available Light of Burbank was entrusted with the task due to their ongoing involvement as visual effects facility for *Demon Knight*. John VanVliet, co-owner of Available Light, was intrigued by the opportunity. "We already had a pretty full plate of effects when the idea came up. As ambitious as it was for their budget, it was a perfect opportunity to show what our Macintosh-based system could do in a cost-effective manner." VanVliet designed the effect to be handled by two fronts: the Crypt Keeper's body would be provided by an actor in costume going through the paces for a background plate, and the puppet head would be physically match-moved on a motion-control stage to correspond with the actor's movements. The final elements would be composited in the computer.

The Crypt Keeper body double, costumed as a classic Hollywood film director, wore a green-screen hood over his head to facilitate the matting process in post. Assisting VanVliet was Laurel Klick, a composite artist who had been asked to help based on her experience with head removal on *Memoirs of an Invisible Man.*

With the first-unit work underway, Available Light production manager Bill Arance was pressed to locate a stage and pull together the blue-screen unit. Complicating this schedule were other commitments that would limit the puppeteers to only two days of blue-screen shooting. Les Bernstien was brought on to program, light and shoot the motion-controlled puppet head for replacement, with Tom Shaughnessy assisting. "It was basically two guys doing the work of ten," says Arance.

To supplement the blue-screen unit, Arance coordinated with Van Snowden, one of the key puppeteers responsible for manipulating the puppet head under normal applications. While

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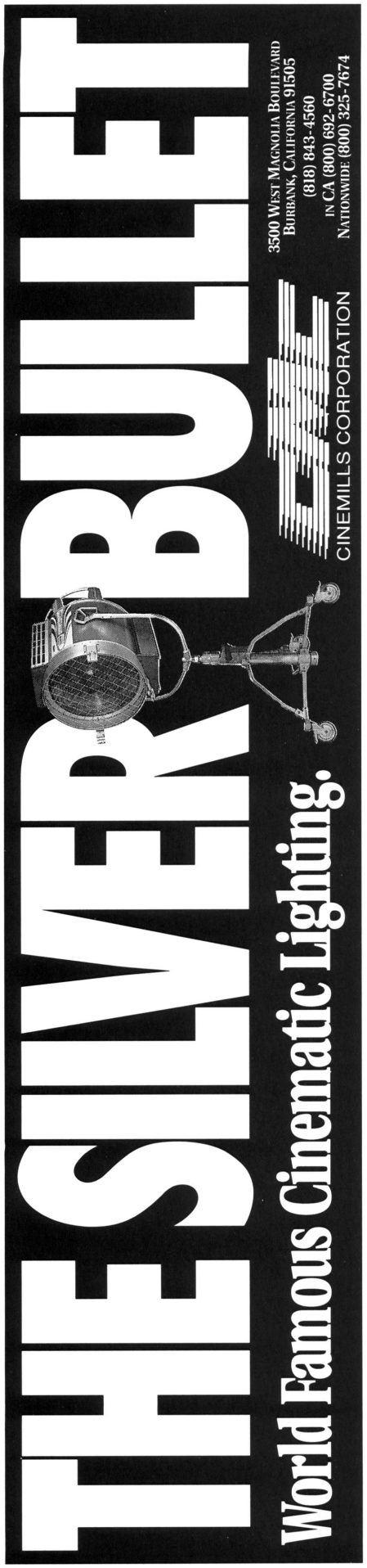


the positioning and movement of the head itself would be determined and programmed with motion control, VanVliet felt that actual animation and performance of the face would still be up to the five puppeteers. "Van and his team developed the Crypt Keeper character over five years," says Snowden. "I wasn't about to tamper with a working formula."

As first-unit director of photography, Rick Bota used a steady-tested Panavision production camera for all plate photography. Additional takes were shot to provide a clean element without the Crypt Keeper for the inevitable paint-back that is required when doing replacement shots. To further sell the illusion, the clean backgrounds also included matching rack focus as the Crypt Keeper approached camera. In order to guarantee a perfect match in angles and lights, all aspects of cinematography were thoroughly documented and rushed to the blue-screen unit, which was programming and lighting simultaneously across town.

While the first background plate was being tracked by the blue-screen unit, the last plate was being shot across town. "If anything had been overlooked, it would be too late to correct," says Arance. As the deadline drew closer, it was apparent that the camera tracking system wouldn't be able to move in real time. The actor's movements were too quick for the motion-control motors animating the puppet head, so Bernstien compensated by shooting at half speed. This in turn made the puppeteers scale down their performance to match the 12fps speed. Even so, only 80 percent of the motion control could be tracked in the short time allotted and it would be left to Klick to complete the positioning in post on the Macintosh.

Another challenge that Klick recognized early on was anatomical differences. As she points out, "The Crypt Keeper is a chicken-necked dead guy. Any actor you find is going to have considerably more meat on him." To solve the problem, Klick and Alan Wolfson meticulously hand-painted and rebuilt the missing shirt collar area for 385 frames of animation.

The result is a convincing 16 seconds of film in which the Crypt Keeper puppet struts toward camera while talking and animating like a live-action character. "We were able to overcome the limits of both time and money by having the best people driving the right equipment. The overlapping skills of the crew paid off — a small team was able to adapt to whatever problems arose."

For information: Available Light, 3110 W. Burbank Blvd., Burbank, CA 91505, (818) 842-2109.

Nashville Equipment Facility

Production Services-Atlanta (PS-A) has opened a 16,000-square-foot production equipment rental and sales facility in Nashville. The facility is equipped to supply a wide range of specialized equipment such as Chapman stage cranes, camera dollies, Lenny arms, Fisher camera dollies, Jimmy Fisher jib arms and rotating jib arms, Steadicam, film-video sync system, Seitz wireless servos, periscopes, Tyler camera systems, cam-remote, Power Pod, Mitchell Bazookas, Teleprompters, low-angle prisms, Cartoni heads, and Arri 16 and 35 cameras, including the Arri 16SR-3 with time code equipment. The facility can also supply full lighting and grip packages to Nashville and Tennessee-based and visiting producers of television commercials, series and movies, music videos and features.

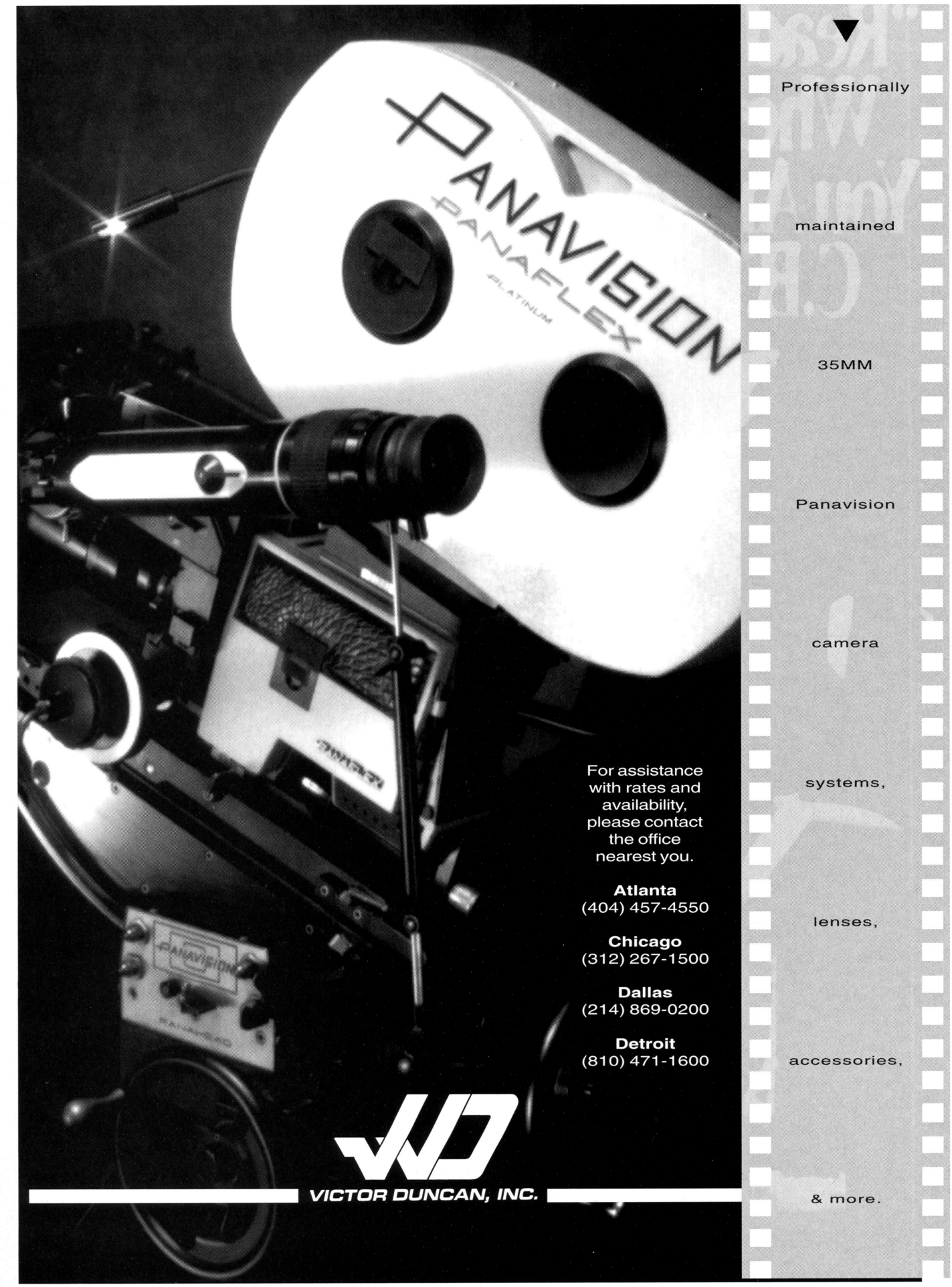
For information: Production Services-Atlanta, 2000 Lakewood Way, Bldg. 4, Atlanta, GA 30315, (404) 622-1311.

Staten Island Production Facility

Nationwide Digital has a new, fully loaded film/video/audio production facility on Staten Island. The Film & Video Department has 5400 square feet of raw space, a fully equipped sound stage, full working kitchen set, automated lighting grid, four-camera system and video control room, and multi-format on- and offline editing.

The 3-D Animation Department offers 3-D and 2-D model design, computer rendering, rotoscoping, morphing, warping, animatics, stop motion, digital compositing and special effects.

The facility's audio services for film and video feature a staff of engineers, producers and musicians, 96 input automated mixing console, 32-track DA-88 & Adat recorders, 24-track Otari 2" analog recorder, and Pro-Tools recording



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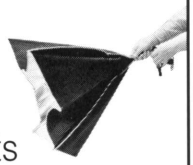

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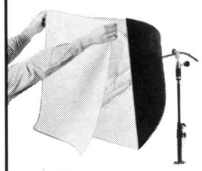

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and editing suite. The department has recently worked on projects by the Jerky Boys, Janet Jackson, Ice Cube, and Force MD, and on the soundtrack for *Postcards from America*.

For information: Nationwide Digital Inc., TV Studio Division, Broadcast Center Suite 3, 4442 Arthur Kill Road, Staten Island, NY 10309, (718) 948-1430.

Atlanta Production Facility Expands

PC&E Lighting & Grip of Atlanta added to their DeFoor Hills Complex last year with Sound Stages 1 and 2. Both feature complete and separate support facilities, K-13 insulation on the ceiling and walls, and massive Jamison stage doors sealing off the outside world. A multi-layered 15,000-square-foot seamless membrane roof reduces impact noise and outside acoustic interference.

Sound Stage 1 is the larger of the two stages, with 9,400 square feet of space plus a 5,000-square-foot set prep area with construction foreman's office just outside the stage door. Technical features include a 50-ton central heating and air-conditioning system in the stage, an observation booth, studio darkroom, 800 amps of 3-phase power, and a 10-ton HVAC system in the support facilities. Stage 1 also features its own production office suite with a UPM/producer's office, conference room and separate production office.

Two loading bays service the stage area, which has its own private entrance and reserved parking space. The stage also has its own wardrobe room, makeup room, and fully-equipped canteen.

Sound Stage 2 features all the same amenities as Sound Stage 1 but within a 5,600-square-foot area. The stage itself has an observation booth, studio darkroom, a 30-ton HVAC system and 600 amps of 3-phase power. The stage has two loading docks with a third bay for production vans.

For information: PC&E, 2235 DeFoor Hills Rd., Atlanta, GA 30318, (404) 609-9001, (800) 537-4021.

New Tape House Division

The Tape House has formed Tape House Computer Ink and Paint, which will serve the broadcast, feature and CD-ROM animation markets. The new division is based on the creative and technical assets of Video Communication, Inc. (VidCom), which created the Computer Assisted Animation System (CAAS).

Another new affiliate company is Tape House Digital Film, developed to provide high-quality tape-to-film transfers.

For information: Tape House Computer Ink and Paint, 222 East 44th Street, 10th floor, New York NY 10017, (212) 557-9611, FAX (212) 953-1762.

Film Restoration Software

X-Designer, a Motif graphical user interface (GUI) builder, is being used at Sony Pictures High Definition Center in California in the development of classic film restoration and image processing software. It is used to create GUIs for software that automates correction of imperfections in scanned film such as dirt and scratch removal, tram-line removal, faded film correction, and flicker reduction.

X-Designer allows developers to create working GUI in minutes. It lets the user interactively design a Motif GUI and generates all the C, C++, and UIL code required for the application. Performance features include internationalization, drag and drop, tear-off menus, HyperText Help, unmatched geometry management, an unlimited Undo button, and a Compound String Editor.

X-Designer also provides graphical front ends to SPHDC's other in-house software. These include custom computer graphics and utilities used to interface computer systems with high-definition video equipment. Sony Pictures is running X-Designer on Silicon Graphics workstations under the IRIX 5.2 operating system and the X-Windows and Motif 1.2 tool kits.

For information: DataViews Corp., 47 Pleasant St., Northampton, MA 01060, (413) 586-4144, FAX (413) 586-3805.

Studio Logo, Station IDs Created

The new 20th Century Fox Studio logo was designed and produced by Studio Productions and created with Wavefront computer graphics software by Topix. The original logo was created 60 years ago using a single, hand-painted glass panel with film optical

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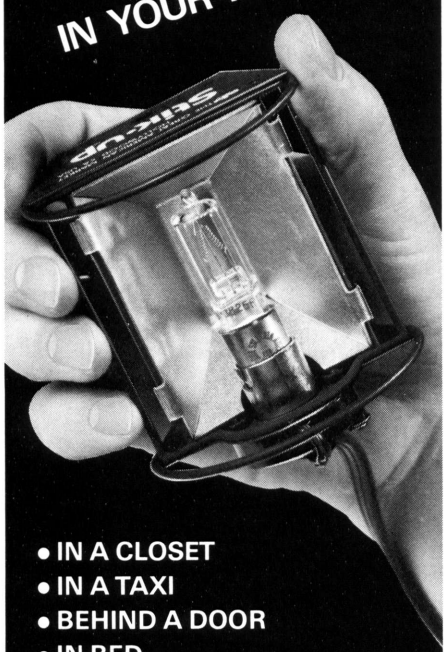

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techniques used to add the spotlights. The studio decided two years ago to update the logo with current visual technology.

First, a new physical model of the original architecture was constructed for a standard motion-control shoot and composite. A long sweeping move over and past the structure was choreographed before the viewers' point of view settled into the familiar low-angle view of the building with its monumental "20" and sweeping searchlight. This required that the perspective of the structure be adjusted to simulate the original glass painting, which was "cheated" to maintain the apparent straightness of the architecture from its very wide-angle POV.

In order to maintain the look of the original painting, Studio Productions proposed a total CGI solution. Denis Gauthier of Topix modeled the structure using Wavefront's Advanced Visualizer, and then created custom software which allowed the 3-D model to appear upright regardless of camera placement. The architectural adjustments and the camera movement were then linked together to interact seamlessly.

Executive producer and director Steve Soffer of Studio Productions established the concept of creating a realistic landscape with settings, including adding a 3-D model of the Hollywood Hills to the traditional logo's environment.

The logo was output in all release formats, including 70mm and archival VistaVision. The multiple formats were easily accommodated by initially constructing an oversized CGI "canvas" of the final piece, then re-scaling it to fit the requirements of different film aspect ratios.

Wavefront's 3-D graphics software was also used to redesign the Fox Broadcasting Company network and location station ID packages. TV Art designed the IDs, using Wavefront's Advanced Visualizer and Dynamation software to create the station ID and graphics package for 160 Fox affiliates.

The new Fox affiliate graphics package includes a main station ID and graphics for special feature presentations, the days of the week, and generic backgrounds. For the main ID, TV Art used Dynamation particle effects to trace out and fill in the letters of the Fox logo. Then, while the traditional Fox spotlights oscillate over the letters, the camera pulls back to reveal the shimmering platinum metallic logo full-screen.

For information: Wavefront Technologies, 530 East Montecito Street, Santa Barbara, CA 93103, (805) 962-8117, FAX (805) 963-0410.

Joint Software Development

Pinnacle Systems and Getris Images have announced a joint development agreement for a special interface link between Pinnacle's high-powered still store and video networking system and Getris Image's Eclipse, Venice and Hurricane videographics composition systems. The agreement generates extensive flexibility and options for users, with a PC-based, open-architecture system solution. The joint interface will provide improved operational performance and capabilities packaged in an easy-to-use interface. Artists can simply and quickly select images from the Getris Images paint system and transfer them to the Pinnacle still store. The direct interface will unleash user creativity without requiring long learning cycles, translating into higher-quality content creation with faster output of final images.

For information: Pinnacle Systems, Inc. 870 West Maude Ave., Sunnyvale, CA 94086, (408) 720-9669, FAX (408) 720-9674.

Sports Film Library Acquisition

Action Sports Adventure has recently acquired the Sportsfilm library, more than 40 million feet of sports legends and great moments of the 20th Century. The collection is built around 1,200 half-hour "Telesport Digest" shows which were broadcast weekly between 1950 and 1966. The collection also includes over 500 additional shows featuring historical broadcasts of college football, basketball, golf, and other sports.

Action Sports also recently purchased the Orra McMurry track and field collection featuring 16mm film of 40 years of Olympic, world, and U.S.-record-breaking performances, from Jesse Owens to Carl Lewis.

For information: Action Sports Adventure, 1926 Broadway, New York, NY 10023, (212) 721-2800, FAX (212) 721-0191.

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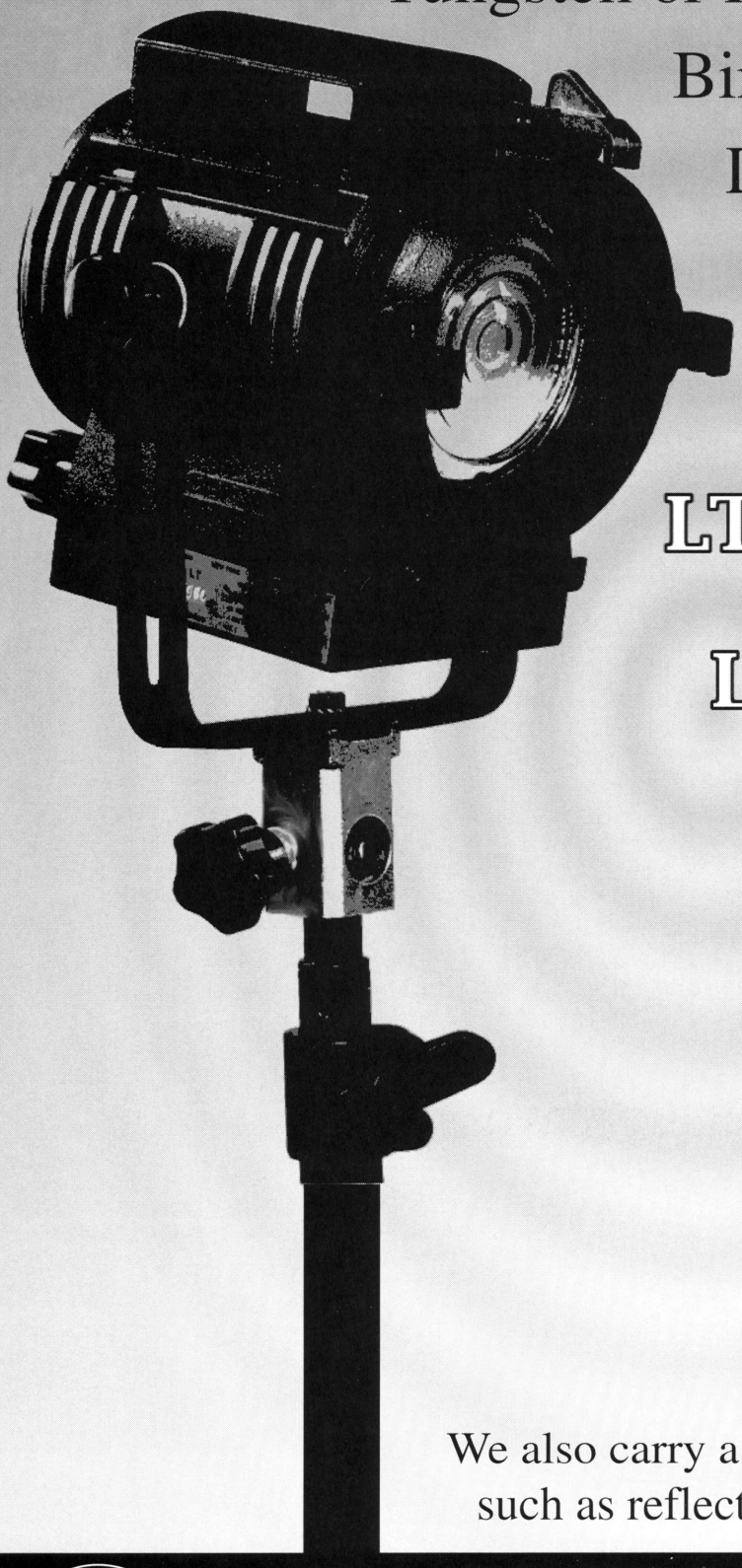

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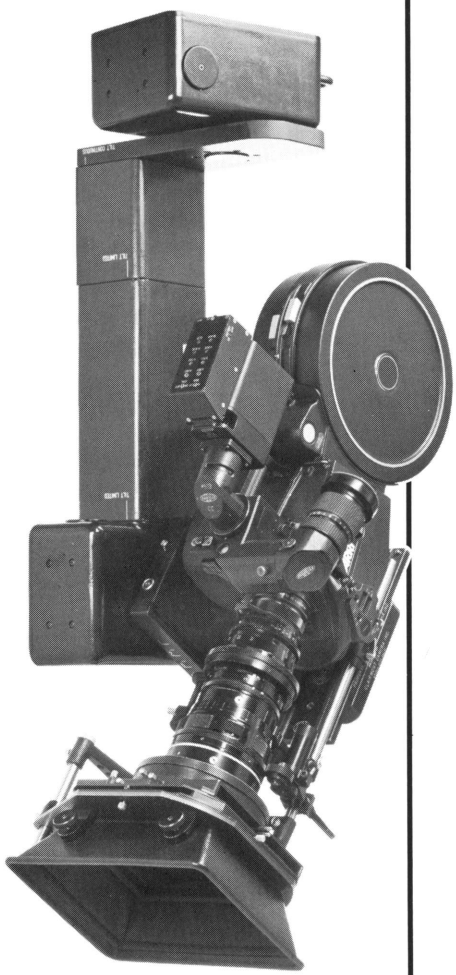

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Matthews Acquires Studio Rentals

Matthews Studio Equipment Group will acquire all of the outstanding stock and operating rental assets of Chicago-based Studio Rentals, Inc. Matthews designs, manufactures, sells and rents grip, camera and lighting support equipment. Studio Rentals owns and operates Chicago Studio City and Rentals on a 31-acre site encompassing 33,000 square feet of office space, three sound stages fully equipped with grip and lighting equipment, numerous standing sets, and 300,000 square feet of storage and lock-up area.

For information: Matthews Studio Equipment Group, 2405 Empire Ave., Burbank, CA 91504, (818) 843-6715, FAX (818) 842-2487.

San Francisco Duplication Facility

FilmCore Distribution and Vault Services has opened a new duplication and trafficking facility in San Francisco. The company, which has operated in Los Angeles since 1983, will occupy a 5,800-square-foot site in the vicinity of the TransAmerica Building and contiguous with the operation of its postproduction division, FilmCore Editorial. The new facility provides vault, duplication, and trafficking services for television and radio commercials and supports advertising agency broadcast traffic departments. The facility is outfitted with two D-2 videotape machines, six one-inch tape machines and a variety of ¾-inch, VHS, Betacam, Betacam-SP and Hi-8 decks. Audio duplication is supported by various DAT and ¼-inch machines. The facility also has a character generator for re-slating. Same-day distribution is available throughout the United States. International distribution and closed captioning are handled on a 24-hour turnaround basis.

Vaulting and order processing are fully computerized using FilmCore's proprietary software which controls every aspect of duplication, distribution, vaulting and billing services. It also includes a database covering every television and radio media outlet in the country, which is revised and updated daily. Vaulted elements are individually barcoded for immediate access. The company will also be establishing a fiber-optic link between its Los Angeles and San Francisco operations for instant interchange of video and audio materials.

For information: FilmCore Distribution/Vault Services, 545 Sansome St., 7th Floor, San Francisco, CA 94111-2908, (415) 397-8400.

Film School Expansion

North Carolina School of the Arts has planned a filmmaking village for its new School of Filmmaking complex to open in fall of 1996. The complex will look and function like a studio movie lot, including a complex of structures along a "main street" featuring exteriors ranging from Mission-style to early Victorian to French colonial. The structures will house the school and double as sets for students' films.

The complex will include three sound stages, a scoring stage, digital post facilities, a 300-seat theater and two 75-seat screening rooms with mixing capabilities, a computer lab, and a teleconferencing center. Various facilities will also be available for use by the other arts schools on campus: the scoring stage may be used as a chamber music hall, and all sound stages will have sprung floors for dancing.

The School of the Arts, established in 1963 as the first state-supported residential arts school of its kind in the nation, enrolls about 900 and offers high school and college Arts diplomas and bachelor's and master's degrees. Nearly $15 million of the $25 million campaign has been raised by the state of North Carolina. The school also hopes to raise private funds for start-up operations, student scholarships and equipment.

The village was designed by Backen Arrigoni & Ross of San Francisco, whose past projects include Robert Redford's Sundance Institute and Lucas Film's Skywalker Ranch postproduction facilities.

For information: North Carolina School of the Arts, (910) 770-1330.

Upcoming Events

March 1 DEADLINE FOR ENTRIES: April 7-9: Canyonlands Alternative Film/Video Festival focusing on independent alternative film and video, Moab, Utah. For information: (801) 259-3330.

March 1 DEADLINE FOR ENTRIES: Movies on a Shoestring at the 37th Annual Rochester International Indepen-

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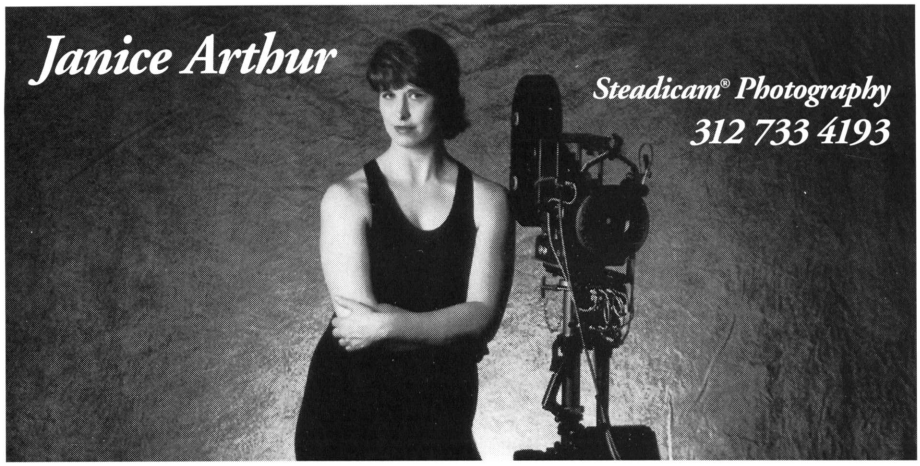

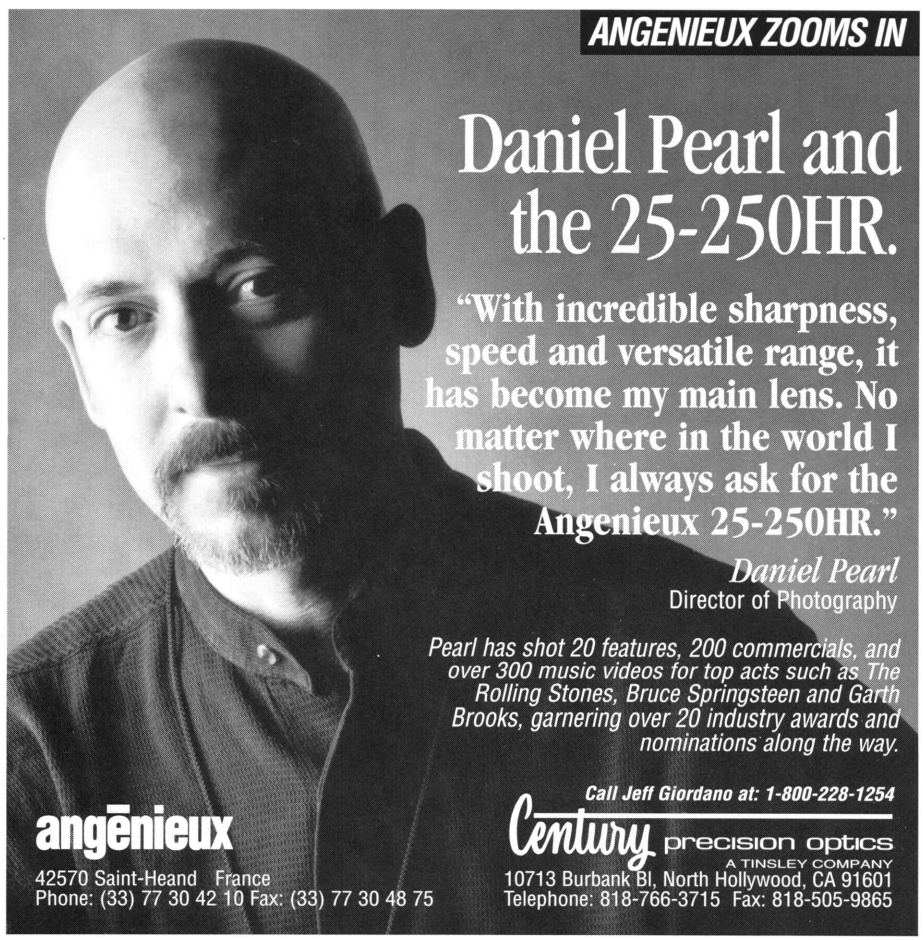
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dent Film Festival.

March 1 DEADLINE FOR ENTRIES: U.S. International Film and Video Festival, Elmhurst, Illinois. For information: (708) 834-7773, FAX (708) 834-5565.

March 4, 11, 18, and 25: Documentary Sundays at American Cinematheque. For information: (213) 466-3456.

March 15, DEADLINE FOR ENTRIES: The International Electronic Cinema Festival, Montreaux, Switzerland, April 30-May 6. For information: 41 21 963 3220, FAX 41 21 963 8851.

March 31 - April 1: Architectural Dimming: System Analysis, courses held by Weekend Workshops and LDI, New York City. For information: Weekend Workshops c/o LDI and TCI Magazine, 32 West 18th St., New York, NY 10011-4612, FAX (212) 229-2084.

April 6-9: Taos Talking Picture Festival, featuring a conference on comprehensive media education and media literacy moderated by Hugh Downs. For information: (505) 751-0637.

April 7 DEADLINE FOR ENTRIES: Intercom '94, International Communication FIlm & Video Festival, Chicago. For information: (312) 644-3400, FAX (312) 644-0784.

April 8: International Underwater Film Festival featuring shipwreck footage at Underwater Canada '95 (a consumer scuba exhibition). For information: Underwater Canada, (416) 426-7035.

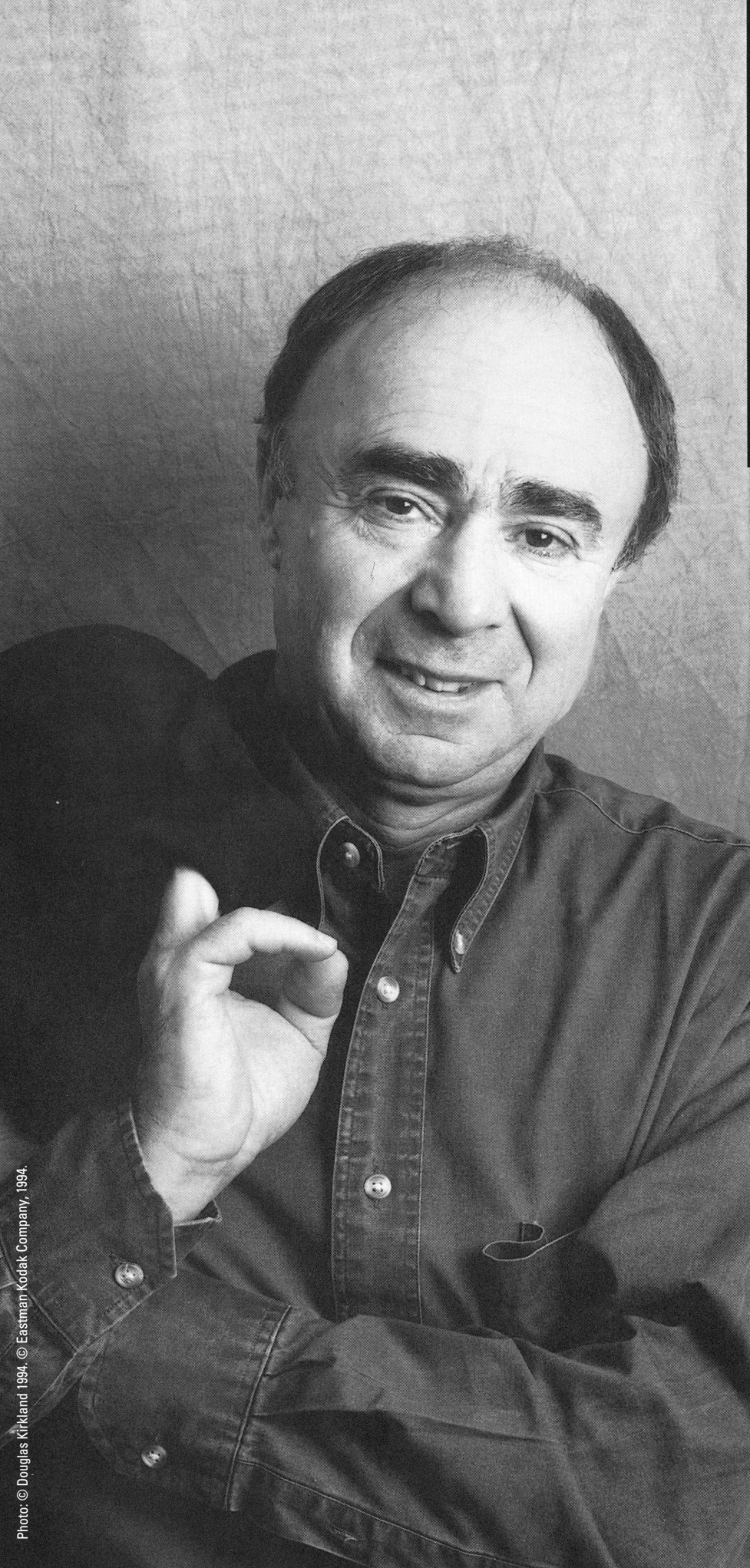
April 8-15: International Wildlife Film Festival, Missoula, Montana. For information: (406) 728-9380.

April 14-21: Third Our Essence Festival of Latin American Film, Providence, Rhode Island. For information: (401) 781-1044.

May 21 - 27, May 28 - June 3: Introduction to the Avid Media Suite Pro, one-week workshops at the International Film & Television Workshops, Rockport, Maine. For information: (207) 236-8581.

May 21 - 27 and May 28 - June 3: The Camera Assistant Workshop and the Film Camera Operator and Assistant Workshop, International Film & Television Workshops, Rockport, Maine. For information: (207) 236-8581.

May 28 - June 3: Intro to the Video Camera and Technology, a one-week crash course at the International Film & Television Workshops, Rockport, Maine. For information: (207) 236-8581.



ADAM HOLENDER ASC ON FILM

"After graduating from the film school in Lódź, Poland, I visited the United States. Less than three years later, I photographed 'Midnight Cowboy.' I'll always be grateful for that opportunity. Cinematography is a unique art that's difficult to describe. What other art form involves so many creative people working together to create one dream? When all of the elements combine, the written word is expressed visually in a way that exceeds everyone's expectations. That's when the story takes on a new dimension that no one anticipated. It's a high that's unexplainable. When the magic of cinema works, for me, it's as exciting as it was 25 years ago. I hope to always retain that feeling. I don't have a photographic signature that identifies my work. I believe every film is unique, and each scene should be approached with a fresh outlook. I never want the audience to be aware of my photography. I want them to experience it."

Adam Holender

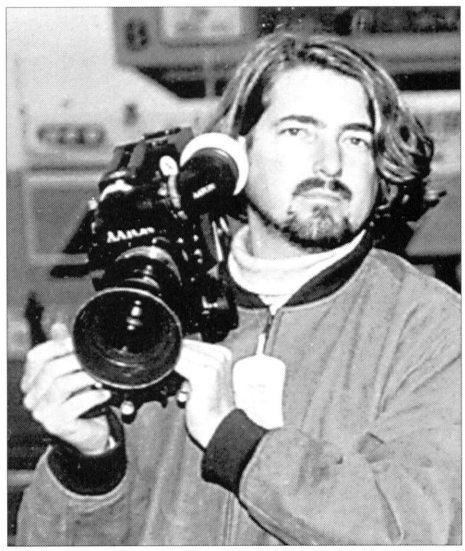
Adam Holender's credits include "Midnight Cowboy," "Panic in Needle Park," "The Seduction of Joe Tynan," "Promises in the Dark," "Dream Team," "Street Smart," "To Kill a Priest," "Fresh," "Smoke" and many commercials which he directed and photographed.

Kodak

The Filmmaker's Film Maker

Photo: © Douglas Kirkland 1994. © Eastman Kodak Company, 1994.

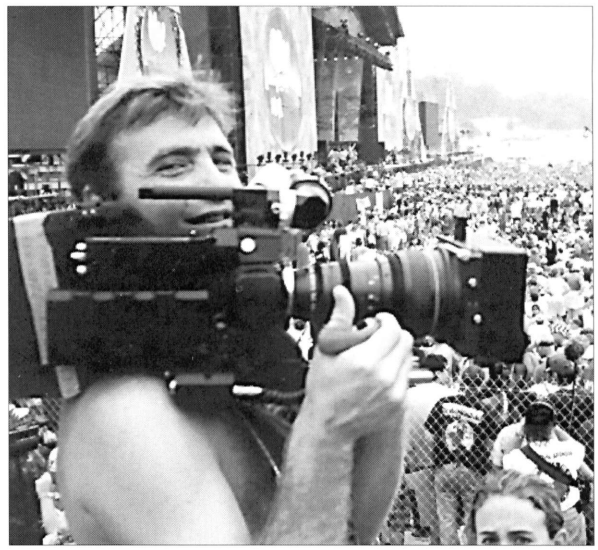
What do these former 16SR owners have in common?



Lee Daniel - Austin-based DP
Credits - Richard Linklater's **Before Sunrise**, **Dazed and Confused** **...And God Spoke**

Camera of choice: Aaton XTR*prod*

"I had always been a happy and dedicated SR owner, but after shooting three or four Super16 features with Aatons, a couple of them entirely handheld, I had to make the switch. There are some pretty good reasons why... for one, the dependability of OriginC, AatonCode and the Keylink system for transfers and non-linear editing... also, its balance, versatility and super-efficient 12 volt circuitry. I expect to work with my Prod well into the 21st century."



Larry Planet - New York-based cameraman
Credits - Tom Spain's **If You Knew Sousa**, **Voices of Doo-Wop** **Woodstock '94**

Camera of choice: Aaton XTR*prod*

"To tell you the truth, the SR-3 wasn't really an option for me... I didn't even consider it. My SR was great but I think the new Aaton is a more straightforward design and an all-around easier camera to use. Sure the time-code and Super16 capabilities were an important factor, but the portability is what really sold me."

When it came time to put aside their old cameras and upgrade to a new generation of equipment... in all cases, these cameramen and DPs chose an XTR to replace them:

Frank DeMarco - New York-based DP
Credits - **Theremin: An Electronic Odyssey**
Larry Fessenden's **Habit**
Alex King's **Red Lipstick**

Camera of choice: Aaton XTR*plus*

"I had to buy a new camera because of all my Super16 shooting... when I looked into the Aaton, well, everything just seemed to make sense. But what sold me, for the most part, was the responsiveness from Aaton and Abel Cine Tech and the willingness on their part to listen to their users and incorporate ideas from the field into the camera design."

Terry McArdle - Wash DC-based DP
Credits - **Smithsonian Frontiers of Flight**,
Inside the Secret Service,
Seawings for Discovery Channel

Camera of choice: Aaton XTR*plus*

"Upgrading a ten year old camera and magazines to Super16 wasn't attractive to me. Considering Super16 and timecode, there were only two possibilities and the choice was fairly clear to me; the Aaton is a quality camera and much quieter than my old beloved SR-II. The camera runs on 12 volts, not 24 volts, a small thing but important to a person with a sizeable investment in 12 volt batteries. But like most things in life, it ultimately came down to price, and the XTRplus was significantly lower in cost."

Peter Reniers - New York-based DP
Credits - George Romero's **Two Evil Eyes**
Hal Gurnee's **Dave's Movie**
Election 94 - six US Senate campaigns

Camera of choice: Aaton XTR*plus*

"For some of the work I do, I wanted a camera that was easier to handhold, but also one that I knew would still be a viable tool for me ten years down the road. When I compared the price of an XTRplus to the SR-3, it wasn't even close... although the Plus doesn't have some of the features of the XTRprod, it has everything I really need."

The XTR series of 16mm cameras:
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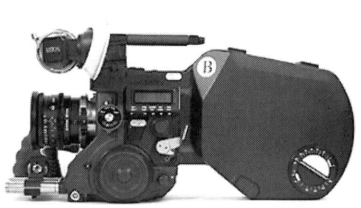

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ILM and Ford Team Up for Mercury Launch

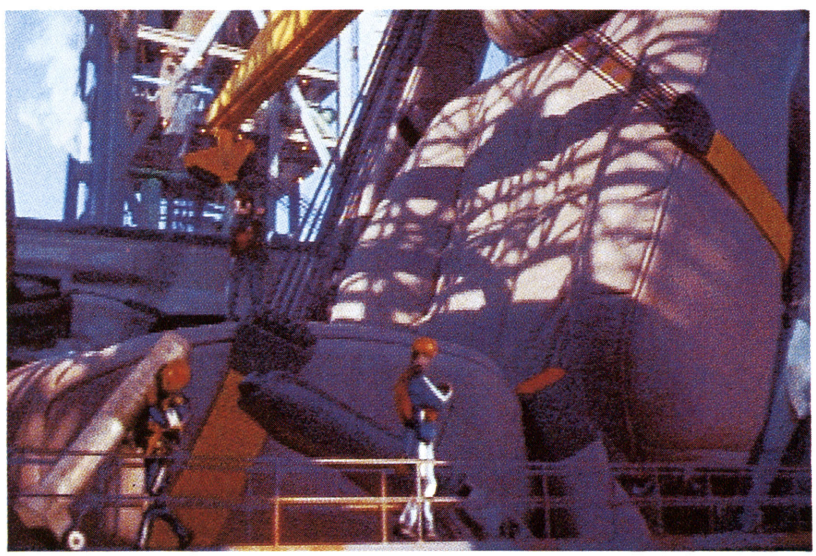
Special-effects house uses digital tools to lend commercial a Space Age look.

by Ron Magid

It's fortuitous that one of the first commercials to emerge amidst an expansion of Industrial Light & Magic's commercial division is called "Launch," a 60-second spot highlighting the new Ford Mercury. But the title could also apply to ILM's manifest to expand its commercial division outside traditional effects-based advertising.

The architect of this new approach is veteran commercial producer Kevin Townsend, who's currently in the process of increasing the commercial division's computer graphics (CG) capabilities while also attempting to lure more straight live-action production fare to ILM. "The commercial division is growing and evolving in response to market needs," Townsend says. "The way I see commercial production going now, even jobs that would traditionally be called live-action are importing some sort of visual effects or some of the newer technologies — whether it's to smooth out shots, or composite locations the company couldn't physically afford to be in, or to add moving type. We want to reach the point where we're doing live-action production, combination work and digital effects commercials all at the same time, so we can address all of those needs."

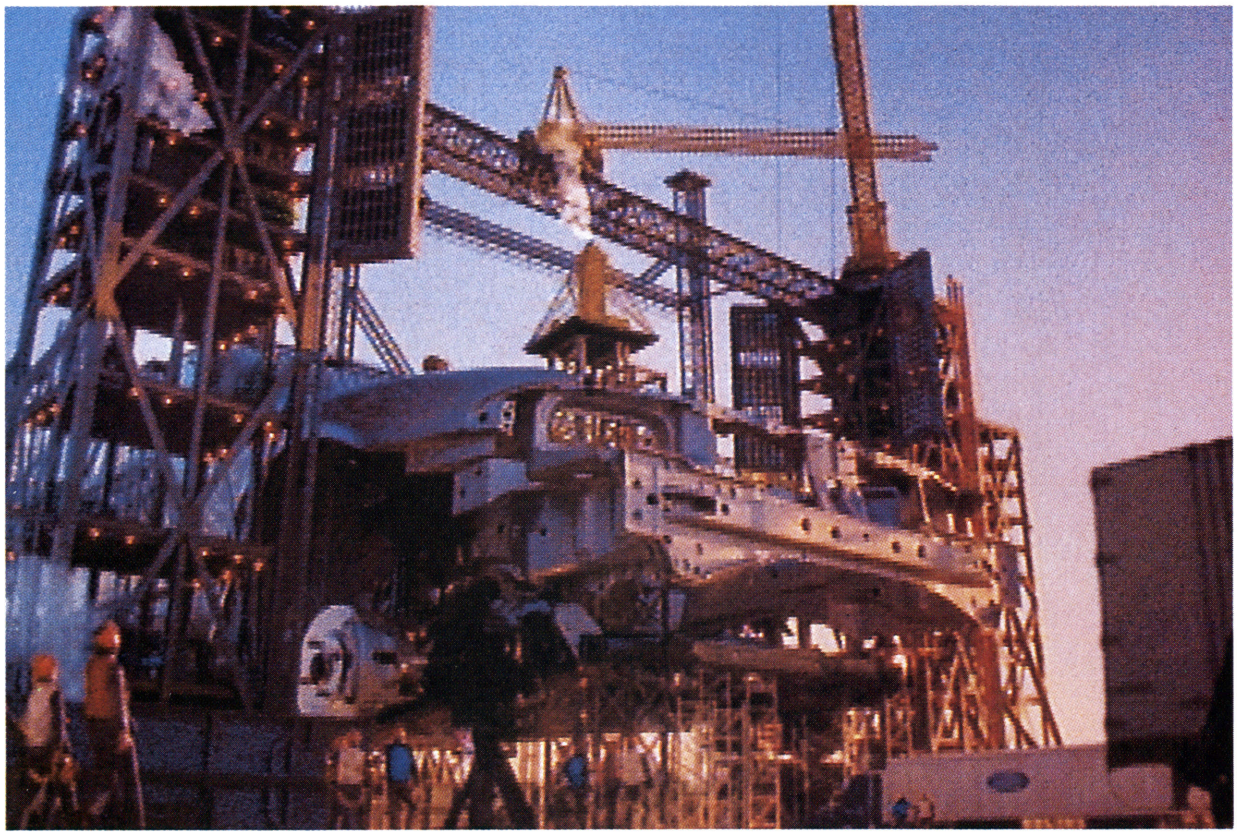
With high-octane effects popping up in "straight" feature films like *Forrest Gump* and *Radioland Murders*, ad agencies are beginning to see digital effects as just another tool, like light and motion, to help paint the picture. "The smarter ones are jumping into this new technology with both feet, so they're at least prepared to make decisions and control their own destinies," Townsend opines. "The great thing about ILM is our diversity: we're not locked into one technology. We're not a CG house, we're not a blue-screen house or a motion-control house — we have options in all those areas and more. That allows us to look at a job initially in terms of how to make the best spot possible and forget about how it will affect us financially. If it means we add effects to solve a problem, then we do that; if we can solve the problem with fewer effects, we do that."



Photos courtesy of Industrial Light & Magic

The ambitious "Launch" spot provided the testing ground Townsend was looking for in his new position. "When the Wells Rich Greene Agency first came to us, they said they had a very tight schedule and they didn't have a lot of money, which is a relative term, for a big project like this. We had some initial concerns. Kip Larson was our producer, and he was a little 'financially challenged.' We took a few risks and it paid off. The agency had very good ideas and Steve Beck, who directed the spot, really rose to the occasion."

Beck is one of five staff directors at ILM's commercial division. (The others are Bill George, Michael Owens, Matthew Robbins, and Bill Timmer.) Beck's high-concept/low-verbiage approach, recently demonstrated in his dreamlike 3-M "Imagination" and breathless Acura "Hot Wheels" spots, was well-suited to the demands of "Launch," which visually equates the creation of new Ford Mercury cars with the launch of the space shuttle. The mysterious subject of this launch is cleverly disguised by a network of steel gantries



Opposite: ***Computerized construction workers bring their expertise to a passenger seat. Notice the steel gantries and crane.***
This page: ***The exterior of the CGI "construction site."***

and cranes, crawling with Lilliputians. Gradually, the scale of the gigantic car is revealed. "After we received the storyboards from Wells Rich Greene, we decided to show this skeletal gantry framework at first because we didn't want you to know what was behind it," Beck says. "We wanted the sense of something massive going on. Then we started working in elements like the car's tire and the engine being lowered in. We slowly built up to reveal that it was a car."

By withholding the subject's true identity, Beck built up a sense of majesty and scale that gave the automobile an immensity and made this bizarre scenario believable. But the spot posed other problems for Beck that were less easily resolved. "We wanted the car to look big without dwarfing the people too much. The agency wanted to make sure that the workers had a certain amount of pride and integrity and a bit of ownership in the car they were constructing."

Beck's recent 3-M Imagination spot was a jigsaw puzzle assembled in post. He was determined to capture as much of Launch's action as possible in-camera. Typically, ILM might film all the various elements on-stage — the car, the gantries and the people — and then composite them all into the location plate. Instead, Beck devised a plan whereby he'd shoot the actual car on location with mechanized, illuminated miniature gantries. "I had to ask myself, 'What goes best with car photography?'" Beck offers. "In my opinion, get as much as you can through the lens, then balance the rest together. Even when you think you've got your bases covered, you often end up wishing you'd shot it live. There's a lot less welding going on digitally speaking, and it all seems to be more integrated and natural shot together. I used the people in the spot sparingly. I wanted to keep them in the background and focus attention on the car."

Beck studied old photos of shipbuilding and newsreel footage of the *Titanic* launch, hoping to create that same sense of scale with his miniature gantries and miniature workforce. Several weeks before the shoot began, Beck and members of his ILM effects team conducted a survey using a full-sized Ford and various scale toy figures.

"We put those little men on our real car and asked ourselves which ones looked believable and which ones didn't," Beck laughs. "We knew we couldn't make the workers too big, but if they were too small, then you wouldn't see them against the car. The winner was a little green army man! We felt that was the proper scale, so we just built our miniatures from there. We figured if a guy was as big as the little green army man, then the crane would be so big, and the car would be full-sized given the scale we'd delineated."

The gantry design was a joint effort between Beck and ILM's Ed Natividad. "Once we devised the proper scale, which was 1/16 scale, Ed Natividad and

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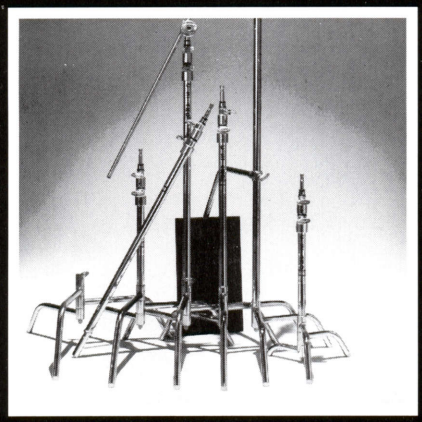

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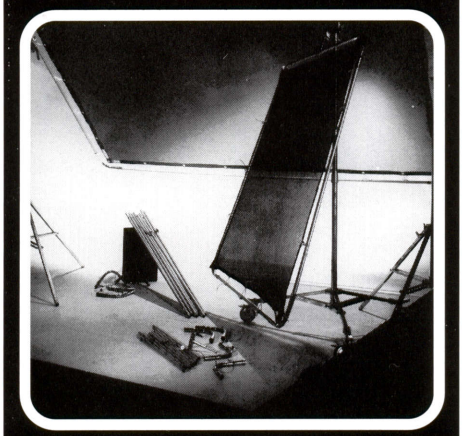

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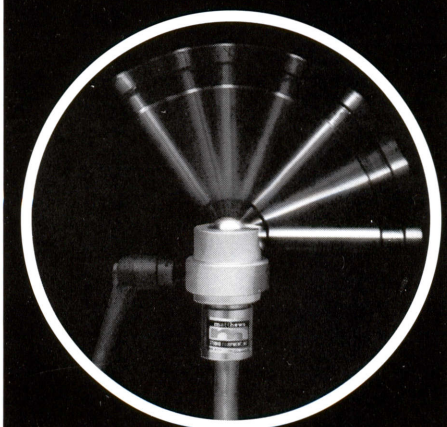

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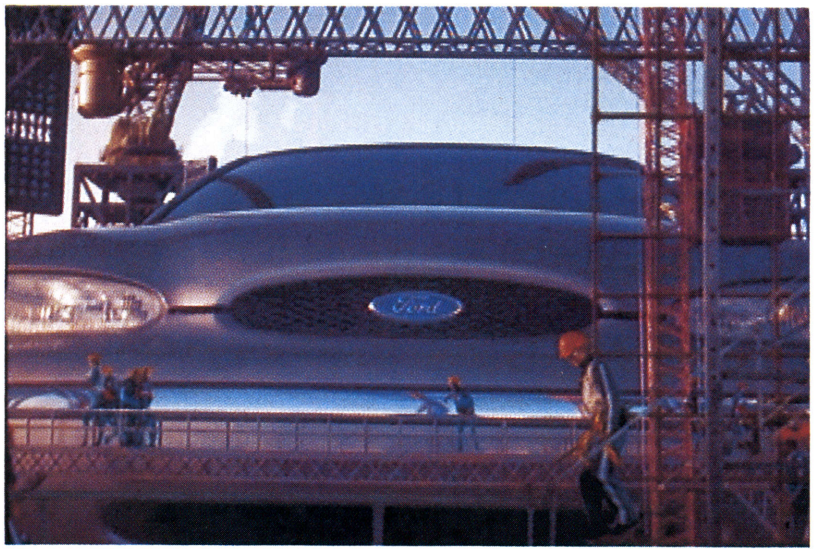

Workers put the finishing touches on a massive Mercury.

I came up with the gantry motif," Beck says. "We looked at quite a bit of Cape Canaveral footage and architectural building technology. We didn't want to waft into some science-fiction netherworld; we wanted the gantries to look like something people have seen before, so the space shuttle and Cape Canaveral influence was mixed with a refinery atmosphere and smoke."

Building the miniature gantries that surrounded the Ford was accomplished in a matter of weeks. Of the four steel towers, only the one closest to camera was completely dressed. The rest were lightly dressed and kept in the background. "Naturally, we used the detailed one for any insert shots of the lights coming on," Beck explains. "Since they were all interchangeable and all rode on their own individual tracks, we could move the fully dressed tower to any corner of the car so it would be closest to camera for the angle we wanted to shoot."

Beck and company took the gantries, the Ford and their equipment on the road to Santa Rosa, where they shot for four days at an old northern California airstrip. "It wasn't being used and it had runways going in every direction," Beck relates, "so it gave us lots of open space. We didn't have to do anything to extend the landscape. We just literally put the miniature gantries up around the car, set up our angles and shot. The only things we didn't screw around with at all in the spot were the car and the landscape."

Cinematographer Andy Dintenfass shot the car against blue sky. "We had to shoot all through the day just to get the amount of work accomplished," Beck explains. "Sure it was hard to get a great outdoor beauty shot of the car with all of those gantries and equipment around, but we knew that going in. We told the agency that they had to accept that the gantry and lights were sitting right next to the car, and therefore were naturally going to reflect, and they didn't worry about it. As we shot all of our basic moves around the car, we just made sure the things we didn't want to see were blacked out."

Despite the amount of effects hardware, motorized gantries and the like, Beck and Dintenfass viewed the production as a practical shoot. "Our philosophy was that it would be nice to get as much as we could in camera, so we tried to keep our elements to a minimum," Beck says. "We did no motion control on location at all. There were motorized miniature cranes, but none of it required repeatable

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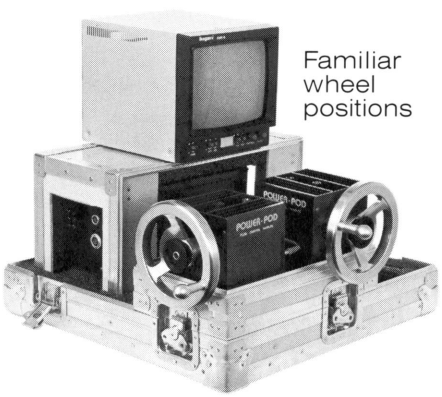

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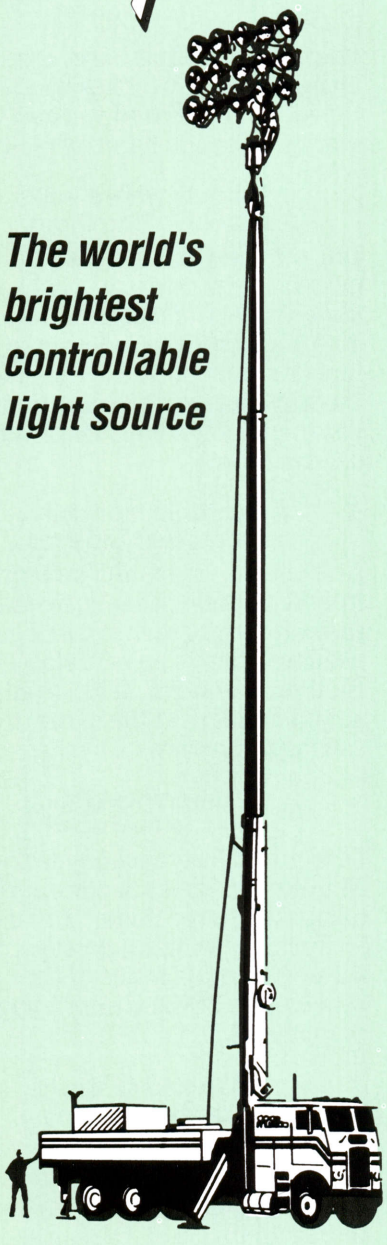
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motion control. We set up cameras and dollies anywhere we liked and let it go."

In the climactic sequence, a workman throws a big switch and all the gantries light up as the car is launched. Tiny people were added in post. "The lights on the gantry miniatures were all practical," Beck says, "so that environmental light helped illuminate the car. As the lights started to go on all around the car, we tried to angle some of the gantry lights correctly so their reflections would crawl across the hood as the car was launched past the gantries."

After concluding the four-day location shoot in Santa Rosa, Beck and company returned to ILM and spent two days filming live-action inserts to lend credence to the scale of the car. For example, as the car was being launched, Beck added a low-angle foreground element of a piece of heavy machinery shooting out sparks. "They wanted the launch to have a big, majestic feel to it," Beck adds, "so I added a guy just standing there who was supposed to represent your basic heroic American worker. We shot the actor on a set that incorporated a sparking machine and a big section of full-sized gantry rig that we built on the main stage."

Other macro insert elements were shot using various parts of the actual Ford, including the engine and passenger compartments. While most of the spot was shot at a standard 30 frames per second for video transfer, a shot where miniature workers supervised the lowering into place of the seats was shot live at 40 fps to give the appropriate feeling of size and to remove any bumps. "Those were full-sized seats being lowered into the actual car," Beck says. "We had a rig that went in the back side of the seat on one end with rigger Matt Heron on a balance rig on the other end. The rigger would just fly it in, but we had to shoot it 40 times to get it to tuck in under the steering wheel with the right fluid motion. Matt had to do a bit of guiding it through. He was sweating bullets by take 40, but we got one in there that was smooth."

The female worker riding on the seat as it's lowering into position was shot against green screen during an additional two-day shoot devoted to green-screen work. "She was shot static, then we took her image into Flame and tracked her onto the moving seat," Beck recalls.

Once the images were brought into the Harry Paintbox, Beck spent a week rotating people around and comping them onto various parts of the car. "The majority of the complications we faced were just trying to get the angles and the compositions to look right," he admits. "That was a howl. We'd have shots from a certain camera angle of the car and gantry miniature work all together on location, then we'd have a shot of the miniature people taken from an entirely different angle. The pieces never quite felt right at first, so we had to adjust for it. We had some forgiveness because the people were always in motion and the perspective always changed. It seemed to work out in most cases, but there were a couple of shots I would've liked to have massaged a bit differently. Then again, we had so many shots to squeeze into the spot. . ."

Executive producer Townsend feels that the spot really shows the company's stuff. "Steve did a terrific job on it.I think it was a good combination of agency resolve and production company determination. There are some seamless effects in there. You know that they're not real, but you can't tell they're fake. I'm really pleased with the way it turned out."

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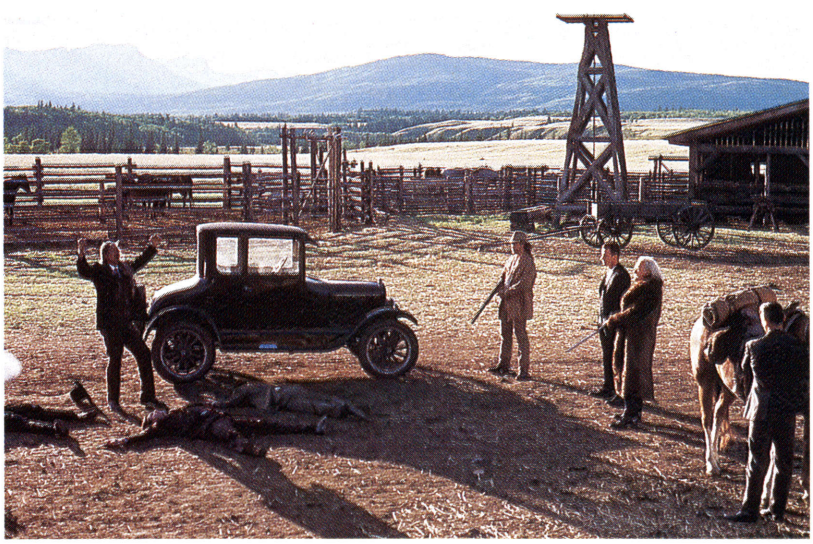
Legends of the Fall Exploits Scenic Locale

Filmmakers take full advantage of Calgary's natural beauty to create old-fashioned, romantic screen adventure.

by Stephen Pizzello



Photos by Kerry Hayes, courtesy of TriStar Pictures

This page: ***In a tense showdown on their home ground, the Ludlow men band together to repel a group of gangsters.*** **Opposite:** ***Director Ed Zwick blocks out the film's climax with actors Brad Pitt (in hat), Aidan Quinn and Anthony Hopkins, while cinematographer Toll (in jeans, just left of camera) plots his angle.***

While shooting *Legends of the Fall*, cinematographer John Toll undoubtedly invoked the realtor's mantra: "Location, location, location."

Filmed primarily on a ranch 40 miles outside of Calgary (but including additional scenes shot in Vancouver and Jamaica), *Legends* offers viewers an epic story of brotherly conflict played out against a series of breathtaking vistas. Reminiscent of both *East of Eden* and the frontier operas of director John Ford, the film is filled with fond stylistic nods to the old-fashioned yarns of classic Hollywood. Toll, whose credits also include Carroll Ballard's America's Cup adventure *Wind* and the upcoming Mel Gibson period action film *Braveheart*, freely admits that he has long been enamored of stories with heroic sweep.

"Like everyone else in this business, I became interested in movies as a kid, and one of my special influences was *Lawrence of Arabia*," he says. "I've never gotten over the experience of seeing that picture for the first time; it really triggered my desire to work in this industry. Stylistically, I'm not one of those guys who worshipped obscure French films in the Sixties. I could appreciate them, but I was a very traditional American kid. As a result, I've always wanted to do a John Ford-style picture, and *Legends* was a perfect opportunity to do that type of photography."

Toll's aesthetic sensibility made him the ideal choice for the task. He reports that upon entering director Ed Zwick's office to interview for the job, he spotted video copies of *Lawrence* and another film he admired, *Days of Heaven* (shot by Nestor

Almendros, ASC), on Zwick's desk. "I immediately saw that we had something in common, and it provided a talking-point for this project," he says. "Those are two pretty fantastically photographed exterior movies, and Ed was interested in attempting that kind of picture. He's a very visual director, and once he hired me he encouraged me to push things as much as possible."

In prep, Toll and Zwick found that their like-mindedness extended to working methods. The duo went through the entire script scene by scene, discussing the concept of each scene rather than the technical requirements. "We had a storyboard artist with us, and we storyboarded a lot of the picture," says Toll. "We didn't use most of the boards when we finally shot, except during the big battle sequence, but they gave us a place to start in terms of visualizing the picture. It was time well spent, as it allowed Ed and me to develop a working relationship. We would talk in general terms about the overall photographic style of the picture. I wanted to take advantage of the natural beauty of our locations, and that meant breaking down sequences to shoot certain angles at specific times of day. During shooting, we weren't always able to adhere to our breakdown, but what was most important was that we started thinking about staging sequences to take advantage of the natural characteristics of the locations in terms of angles and existing light.

"When we got on location, we knew which direction we wanted to shoot in and the ideal time to do it. I'd walk around with the finder while Ed worked with the actors. I'd find a

The Ludlow brothers and their Cree friend march off toward their destiny on the battlefields of World War I. This scene provided Toll with a chance to exploit Calgary's extended magic hour.

shot and show it to him, and he'd either say, 'Fine,' or 'I have another idea.' I wasn't proprietary about ideas, and he wasn't either; there was a lot of give and take. I always had the feeling that we were working on the same movie. Sometimes you get the feeling that everybody's doing a different picture. I like it when a director stays on the set while I'm lighting and preparing a scene. Sometimes I'll get an idea that means changing an angle or the staging. It's great if the director's around so we can work it out. That way, I don't waste an hour doing my version of the movie, only to find out later that it isn't his version. It's a cliché to say it, but this is a collaborative process and it doesn't work if people aren't on the same page. Ed feels the same way, so things went very smoothly in that respect."

For Toll, the assignment represented the chance to put years of preparation to the test on a truly high-profile, star-driven project. His interest in movies began in the cinemas of Ohio, where he took in pictures from every genre. When he reached the ripe old age of 19, Toll moved to Los Angeles to pursue a career in motion pictures. "I was always interested in still photography, he notes. "A lot of guys talk about going to museums and studing paintings. I think that provides a very valuable foundation, but I get more ideas from photographs. The whole point of this business is telling stories with pictures, and that's why I love it so much."

Upon arriving in the nation's movie capital, Toll embarked on a very traditional route to the top. He began as an assistant cameraman and later graduated to camera operator, where he had a long and noteworthy career. Toll operated A-camera on more than 15 features, for ASC members Conrad Hall, Jordan Cronenweth, Allen Daviau, John Alonzo and Robbie Greenberg, among others. He eventually joined their ranks as a director of photography in 1988. "I probably worked as a camera operator for longer than I should have, but only because I really enjoyed the job," he says. "The directors of photography I worked with were all very serious and passionate about their cinematography, and they encouraged me to participate as much as possible. I had a great time as an operator."

In addition to his feature work, Toll's resumé includes the pilot for the ABC Western series *The Young Riders* (which netted him an ASC Award nomination), the CBS Movie of the Week *Goodnight Sweet Wife*, the television special *A China Odyssey: Steven Spielberg's Empire of the Sun*, and more than 100 commercials.

Legends of Fall, however, was a dream assignment. Based on Jim Harrison's novella of the same name, *Legends* tells the tale of a tightly knit male clan that is torn asunder when a beautiful and charming woman appears in their midst. The story begins in the mountains of Montana, where the principled and dignified Colonel William Ludlow (Anthony Hopkins), a retired U.S. Cavalry officer disgusted by the government's treatment of the West's Indian tribes, has built a sanctuary-like ranch for himself and his three sons — the idealistic Samuel (Henry Thomas), the practical and responsible Alfred (Aidan Quinn) and the wild, untamed Tristan (Brad Pitt).

The four men live in happy isolation, along with the Colonel's old Cree scout, One Stab (Gordon Tootoosis), and a family of half-Indian ranchhands. Samuel returns from the East Coast with his fiancee, Susannah (Julia Ormond), a refined but high-spirited beauty who immediately takes to life on the ranch. The Ludlow men are soon entranced by her, but their peaceful existence is shattered by the onset of World War I. Against their father's wishes, the brothers enlist, and Samuel is killed in combat overseas. Alfred and Tristan make it back home, but soon find themselves competing for their brother's widow. The resulting quarrel becomes a bitter and enduring split that threatens to shatter the family's iron bond.

Toll began formulating his strategy for shooting the picture while reading Harrison's novella, which emphasizes the key role the Montana landscape plays in molding and shaping the Ludlows' belief system and way of life. "The beautiful location was inspired directly by the novella, which had incredibly rich descriptions of the settings," says Toll. "To have an understanding of the characters, you really need a sense of the environment. Many of the landscapes and vistas that are in the movie were things we

Toll, atop a ladderpod steadied by his crew, sets up a shot of Alfred and Susannah's graveside encounter. Grip Bobby Huber introduced the cinematographer to the fast-deploying device, which allowed Toll to elevate the camera from six to sixteen feet off the ground.

simply could not resist photographing. The landscape was so beautiful and the skies so dramatic that it was impossible not to shoot them. We really wanted to establish the natural beauty of the locations in the best way possible. That extended to placing the characters within these settings, which predetermined the most naturalistic photographic style that we could come up with. We went out of our way to make the lighting feel natural, and not manipulated. At times, that meant doing nothing at all to the light, but if it didn't look good, we had to go to great lengths to make it look natural. We put a lot of energy into making it look as if we weren't doing anything!"

While Toll insists that he never "over-intellectualizes" his approach to camerawork, he did abide by the logic of this naturalistic strategy. His determination to link the characters to their surroundings is evident in his compositions, which have a bold, larger-than-life feel, making frequent use of wide angles. He notes that the wide angles were partially a result of the decision to shoot in the 1.85 format rather than anamorphic. "We originally intended to go anamorphic, but Panavision had a shortage of anamorphic lenses when we were shooting," he says. "They could have supplied us with enough for a normal picture, but because of the war sequence, which involved multiple cameras, they could never supply us with enough lenses all at once.

"I wasn't comfortable with other anamorphic systems, and I wasn't interested in any other wide-screen formats," he adds. "I'm not a big fan of Super 35, because I don't like the idea that you never have an original negative print. Everything's an optical, and you never see your picture until you're in the answer-print stage.

"Opting for the 1.85 format didn't really change my plan at all, except that I had to work harder getting some scope into the picture. When I read the script, I realized that *Legends* was basically a dialogue-driven performance picture. I felt that it was really important to open up the picture as much as possible with the visuals. As a result, the compositions really have that classic Western 'big sky' feeling. The 2.35 format certainly lends itself to vistas a bit more than 1.85, because it's a horizontal environment. But as I learned on *Wind*, it's not always the best choice. Prior to shooting that picture, Carroll Ballard and I had discussed shooting a 2.35 format before it suddenly dawned on us that sailboats are vertical!"

Toll's use of naturalistic lighting helped to balance the striking compositions and keep the characters human. "The photography is certainly highly stylized — and, in retrospect, perhaps overly romantic and a bit over the top. But I wanted it to feel as if we were basically watching people go through their lives in a certain environment. The idea of the wide shots and vistas was not only to show how beautiful it was, but to put the characters into their setting with a sense of scale. There was so much exte-

Right top: ***The crew sets up a scene in which Tristan (Pitt) confronts a bigoted bartender. Toll says that this sequence demonstrates his ideal for the picture's look. He lightly smoked the set, and lit the room with one large soft interior source. The shaft of sunlight was provided by a tungsten-corrected Xenon.***

Below right: ***Another angle in the bar set illustrates Toll's use of directional source lighting.***

rior dialogue and performance in the film that there were basically only two image sizes: extremely wide and extremely tight. There wasn't much in-between. I wanted all of the close-ups of the actors to blend in with the wider shots, so we put everybody in the most flattering natural-type light we could."

In the case of the film's romantic leads, this meant using warm backlight during exterior scenes. Pitt and Ormond virtually radiate a golden hue during their idyllic interludes, which effectively conveys the powerful attraction the characters feel for each other. "The love story is the center of the film, and we had to make Brad and Julia look as good as possible. For that reason, we wound up cheating close-ups into backlight quite a bit. I also used some light diffusion on them at times."

Toll's primary daylight stock on the picture was Kodak's 5247. He used 5293 for low light exteriors and some interiors, and 5296 for night exteriors and some night interiors. "I'm a real fan of 47," he submits. "I find that the colors are less saturated and the blacks are stronger than what you'd get with 5248. 93 is a good intermediate stock. I find 98 to be superior to 96, but it wasn't available yet when we did this movie."

The cinematographer's workhorse lenses were the Primo 100mm and 150mm for dialogue, and the 17.5mm for wide shots. "I also own a Canon 150-600mm, which was invaluable for the setting we were in, and a Canon 200mm 1.8, which I find to be a really fantastic lens. It blends right in with the Primos."

He made extensive use of the Primo 11:1 zoom as well. "The zoom was so good that we would almost use it like a prime lens for exteriors. It was much sharper and faster than the other zoom lenses available at that time, and it matched with the Primo primes much better than any other variable-focus lens did. It was a great tool for this particular picture, because so much of it was exterior; I didn't feel like I was sacrificing anything by using that instead of the primes. At lower light levels, of course, there is a difference. But in a normal day exterior situation, it's an exceptional lens."

There were plenty of choice targets for this optical arsenal. The ranch location offered a cornucopia of photographic opportunities and scenic variety, and Toll rates it as one of the best natural settings he has ever been dealt. But every paradise has its price, and in the case of *Legends*, the elements were a formidable factor. The film was shot during the summer of 1993, when Calgary, like the Midwestern U.S., was drenched with rainstorms and floods. "The location was really beautiful, and lent itself to everything we did. But we also had to deal with changing weather conditions on a day-to-day basis. We had a lot of rain, and the unpredictable conditions really complicated the schedule. It's a tribute to our A.D., Nilo Otero, that we only went two days over the 84-day estimate. A very important aspect of trying to capture a natural feeling was scheduling things around certain times of day and certain types of weather. He was very attuned to that idea, and he sometimes suggested things I hadn't thought of because he knew it would help the look. Cinematographers are

Toll felt that placing the film's characters in their natural surroundings was essential to an understanding of their motivations. Here, the high-spirited Tristan revels in the freedom of the open land.

constantly fighting for good light, and trying to be in the right place when the light is good. If you don't have an A.D. who helps you with that, you're going to lose more often than you win."

Toll reports that the weather changed so quickly that forecasts became meaningless. He and Zwick would take note of weather reports, but they frequently found themselves reassessing their shooting day on their morning drive to the ranch set. "If the weather did what it was predicted to do, we would proceed with the call sheet. But as we got closer to the ranch on the way in from Calgary, we often could see what was really happening, and we'd start planning our adjustments. It was one of those situations where everyone had to be light on their feet and constantly adjust to weather, because so much of the picture was exterior. We couldn't really shoot that much in the rain because it never rained for a long enough period of time; if we tried to shoot in the rain, the conditions could change within an hour. We might get a master done, but by the time we were ready for coverage the clouds would go away and we'd be in brilliant sun. Matching shots was a major consideration; before we jumped into an exterior scene, we really had to feel comfortable that we had at least a 50/50 chance of matching what we'd started in the morning."

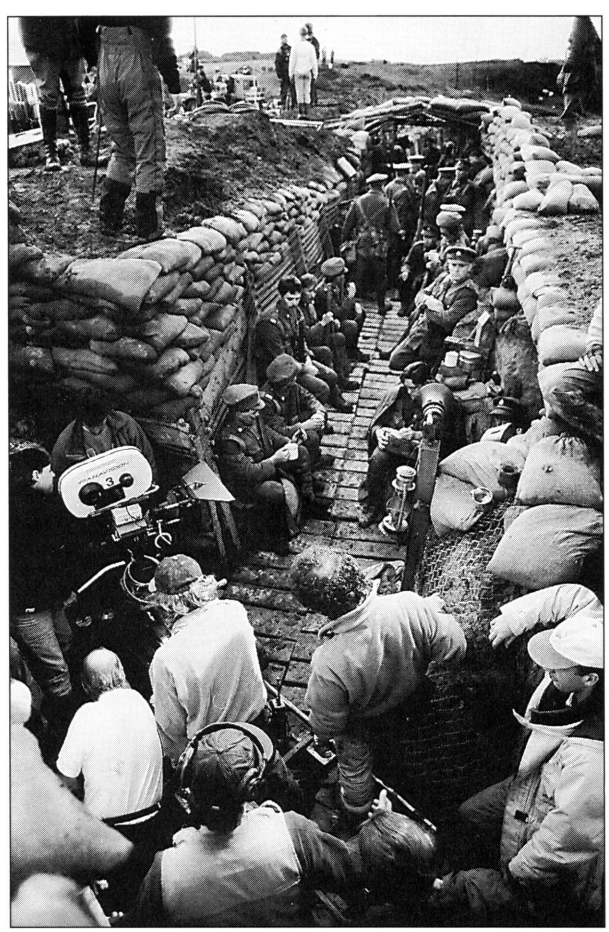
The cinematographer credits production designer Lilly Kilvert for a stroke of logistical genius that saved the day. "Usually, that kind of shifting, unpredictable weather is incredibly difficult to deal with; you lose time, you end up having to go back to the stages, and so on," he relates. "But Lilly had decided early on to make the first floor of the ranch house a practical set, and it made all the difference. The upstairs bedrooms that you see in the film were on a stage, but everything we shot in the dining room, living room and kitchen was done right there on location. If it looked like we were going to have problems with the weather, we'd just go inside the house. There were a lot of short scenes in the movie that allowed us to get in and out of interior setups within three hours, so if the weather improved in the afternoon, we'd still have an opportunity to go outside and do some exterior work."

Despite the necessity of such careful planning and flexibility, Toll reports that the filmmakers' efforts were richly rewarded when the skies cleared and the sun revealed the true majesty of the region. In order to fully exploit favorable conditions, the director of photography encouraged his crew to take advantage of every visual opportunity. Second-unit director/cameraman David Wagreich shot a montage of the young Ludlow boys growing up, establishing shots of the ranch, some of the vistas, and other footage. Wagreich further served as the director of the second-unit battle sequences, and was joined by second-unit director of photography Ron Orieux during those complex setups. "Ron also shot two days of pick-ups I wasn't available for, and he did a great job matching my work," says Toll. "In addition, if we had a really beautiful day or had dramatic changes in the weather, I would turn loose

Right top: ***Zwick and Toll confer with actors on the battlefield set, which was carved out on a sizable chunk of Calgary farmland.***
Below right: ***Dolly tracks were set up to provide a view within the trenches. Toll cites Kubrick's*** **Paths of Glory** ***as a visual reference for this scene.***

my camera operator, John Clothier, to get yet another angle of the ranch with an interesting sky. There was so much happening, and it was so beautiful, I couldn't resist."

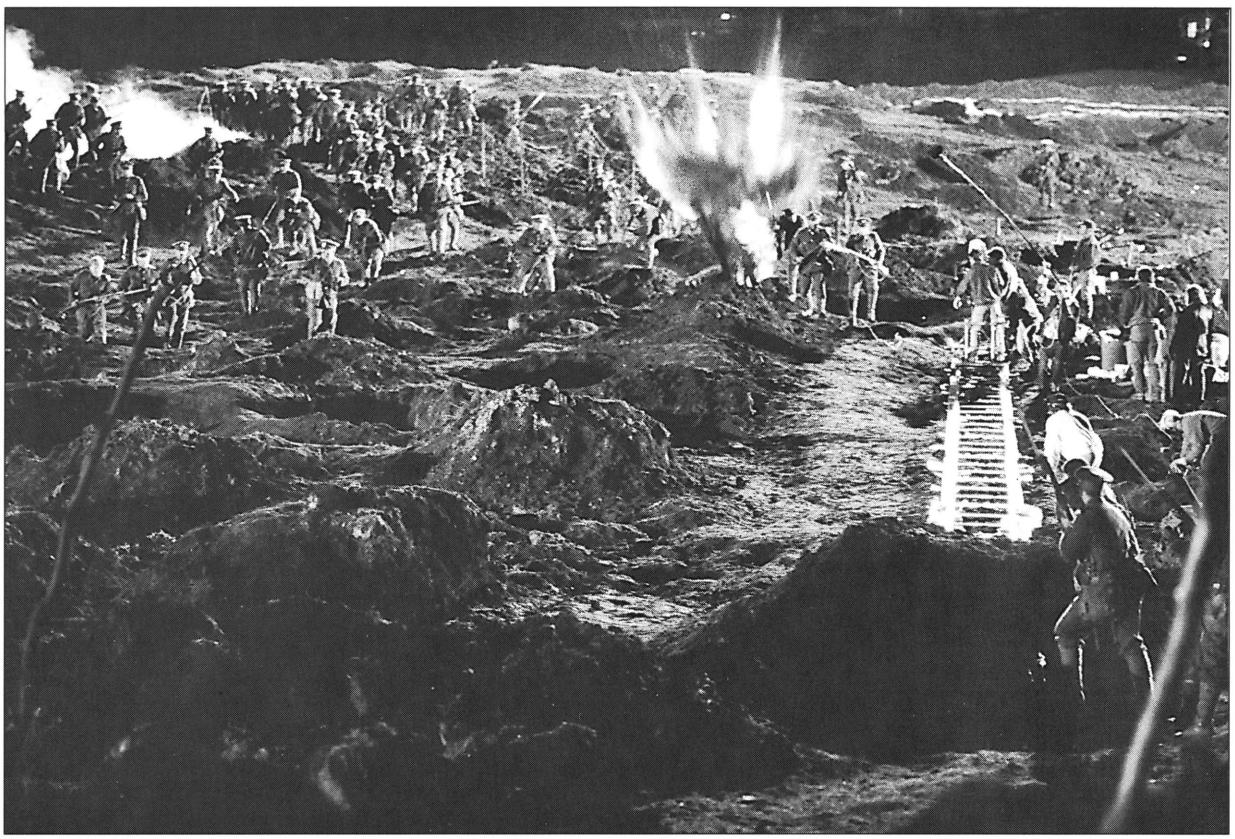
The wisdom of Toll's approach is apparent in the finished film, which literally flows over with magnificent skies and vistas. In filming the Elysian splendors of the terrain, Toll stayed true to his naturalistic plan by avoiding too many tricks. He sometimes used very subtle neutral-density grads to darken the sky in relation to the land, and occasionally added color (mostly blues) to the composition, but in general, he let Mother Nature provide the palette. "I had three really good opportunities to shoot dusk scenes at magic hour — a shot of the brothers riding off to war, another in which Brad Pitt is breaking a horse in a corral, and the scene just before Tristan and Susannah make love," he recalls. "Because we were shooting in Canada in June, July and August, magic hour lasted much longer than it usually does. The quality of light was best on a clear day, when the blue sky itself became the light source. We were basically lighting people with reflected light off the entire sky, and the actors' skin tones took on an unbelievably luminescent quality because they were reflecting the clear blue sky as opposed to grey clouds.



"The trick, of course, is having enough time to shoot those scenes," he points out. "We could only get about two really good setups in the time we had for magic hour, which was about 30 minutes. If you're really well rehearsed and set up, you might get 2 ½ setups, which is not quite enough to do a normal sequence. So you have to plan sequences that you can do in one or two setups. You can't take time figuring out what the shot is, or moving the camera around."

Occasionally, nature would deal out a perfect hand. In one instance, however, Toll's cards were so good that the untrained viewer might suspect that the cinematographer pulled a few aces from his sleeve to achieve it. "There's one sunset in the picture that looks unreal and completely fabricated, but it's fully authentic," he reveals. "The shot occurs just before the boys go off to war. David shot it. It almost looks like some weird matte painting, but one of the things I'm proudest of about this movie is that there are no mattes or CGI tricks. I realize that all of that stuff is wonderful and great for the business, but I feel good knowing that there's a movie out there — a period film, in the Nineties — that isn't filled with computer tricks."

Toll did add some filtration — rear nets and ProMists — to some of the pre-war scenes at the ranch in order to enhance the happier tone that prevails during the early part of the story. "For those scenes, we desperately tried to avoid shooting when it was overcast," he says. "We wanted everything before the



The film's Canadian/ American special effects crew installed an elaborate network of wires and explosive charges on the battlefield, allowing the filmmakers to quickly and safely coordinate convincing artillery blasts.

war to convey the warmth, optimism and innocence of the family, so we could have some contrast later on."

That contrast arrives in spectacular fashion when the viewer accompanies the Ludlow brothers to a hellish, artillery-scarred battlefield in Europe. The nighttime war sequence was the most difficult and involved setup in the entire film, requiring weeks of preparation by the production team. Working on a plot of farmland 400 yards long and 300 yards across, the film's landscaping brigade plowed up the terrain and added trenches at either end. When the field was sufficiently tilled, a Canadian/ American special effects team installed explosive charges and an elaborate network of wires that allowed the filmmakers to set up impressive-looking stunts within minutes. Even the rain served its purpose, helping to create the muddy look of trench warfare.

To add to the realism, the production hired nearly 800 extras to serve as soldiers. Zwick was well prepared for the logistics, having organized elaborate period battle sequences for the 1989 film *Glory* (which won a Best Cinematography Oscar for Freddie Francis, BSC). In an inspired piece of planning, the extras were organized into crack units by reserve Canadian Army officers with actual military experience. "They basically started drilling the extras, and the extras really started getting into it," Toll recalls with a laugh. "In their minds, they became soldiers. They developed a real *esprit de corps*, and they would come to the set in formation, singing marching songs! We had about 20 or 30 stunt guys to handle the dangerous stuff, but in some of those sequences, like the shots of the Canadian troops charging the German wire, we used a couple hundred guys at once. It was quite a sight to see 200 or 300 guys charging us with fixed bayonets, while flares and explosions were going off all over the place; it really looked authentic."

Toll lit the entire area with two full-sized Musco Lights and one Mini Musco. The flashes of overhead explosions were simulated via a combination of four Lightning Strikes units and two lackapodium towers. The towers created an explosive effect by releasing a vapor and then igniting it. Added to this mix were authentic signal flares. "I went through a bit of anxiety over this sequence," Toll relates. "It was the most difficult sequence in the film in terms of both logistics and execution. The weather was awful, and the set was a sea of mud; it was very difficult to move around in. Some of the crew members were describing it as the worst experience of their lives. The fields were too muddy for the Musco Lights, so we had to cut roads for them weeks in advance. Fortunately for me, my gaffer, Jim Plannette, had a lot of experience with Musco Lights. I knew what direction I wanted the light to come from, but wasn't sure how far away to cut the roads. I kept expecting to have a recurring nightmare in which 800

Near right: ***Samuel (Henry Thomas) announces his intention of enlisting, to the dismay of his fiancee, Susannah (Julia Ormond). Production designer Lilly Kilvert turned the first floor of the ranch location into a practical set, which allowed the filmmakers to stay on schedule during inclement weather.***
Far right: ***Toll's close-ups on the film's romantic leads were natural and unmanipulated, with golden highlights provided by backlight.***

extras would charge me with fixed bayonets, screaming, 'The Musco Lights are too far away!' But Jim did a great job in sighting the positions for the roads. With our ability to focus each of the 15 lamps on the Musco individually, the plan worked pretty well."

Night work always requires a delicate balance. An earlier scene from the picture, in which a youthful Tristan confronts a grizzly bear in the woods, also involved a bit of experimentation. Toll used HMIs for overall ambience, and backlit the bear with a Condor-mounted 12K aimed down through the trees, which provided shadows for contrast. "I shot those scenes at about 2.3," he explains. "Normally, I like to work around 2.8. I always have great intentions of working at 2.8, but I'll get to 2.3 if I'm lucky, and sometimes I'll shoot at 2. I have a terrible habit of balancing myself out of exposure; I keep taking light away. When I look at something I'll occasionally get the feeling that it looks 'lit,' so I'll start taking light away until I think it looks better. But by the time I'm done, there's no exposure left and I have to open up the lens. It's always my intention to keep things as simple as possible. On this film, I just didn't want it to look as if the actors were standing in front of lights."

That kind of subtlety is trickier in interior sequences, when the temptation to fiddle with fixtures is ever-present. Most of the film's interior light was generated by oil lamps, candles and firelight. As always, Toll tried to keep the look natural, but he didn't become a slave to his sources. "I'm not into literally playing a source; if a guy's sitting next to a lamp that's next to the left side of his face, it doesn't necessarily mean that I'm going to light the left side of his face. I just use practicals to provide a certain characteristic for the light, and then try to light the actors with light that has that same general character."

One of Toll's favorite interiors on *Legends* was a watering hole in which Tristan confronts a bartender who refuses to serve the Ludlows' Indian companions. The room is lit by warm shafts of sunlight that catch the dusty feel of the old West. "We added just a bit of smoke to create some ambience. I tried not to oversmoke it, because I hate that look. I didn't use much diffusion inside. I wasn't sure how I was going to light the bar, so I stuck one large soft source in the corner. Outside, we were using tungsten lights through the windows; I think we had a tungsten-corrected Xenon coming through the left-hand window to simulate a strong shaft of sunlight. That scene was shot on a stage, and it really represents the ideal look I had in mind for this picture."

Reflecting upon an assignment he sums up as "thoroughly enjoyable," Toll lauds his crew for their vigilant efforts on his behalf. "They were always thinking of ways to make my life easier," he says with appreciation. "For example, the grip, Bobby Huber, introduced me to a device called a ladderpod, which is basically a tripod that's built out of extension ladders. It was developed in England, and this is the first time I've seen it. You can go from six feet up to about 16 feet. It basically replaces paral-

lels, and it's great for working on mountainous terrain. You can just carry it around, and within 60 seconds you can have the camera 16 feet up in the air.

"We also used a portable crane called a Boom Slang. There's only one in the country, and it comes from Grip House in London. It's a modular crane that's safe. It's very handy, and we were able to carry it into places that were completely inaccessible for things like a Titan crane.

"What made this project special was that everybody — the crew, the production designer, the art department — was interested in the visual aspects of the picture," he concludes. "They were always looking for ways to help me enhance the look, and it made a really big difference." ☙

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ASC Hails Career of Gabriel Figueroa

by Tom Dey

Most of the following article is reprinted from a report which originally appeared in AC *March 1992.*

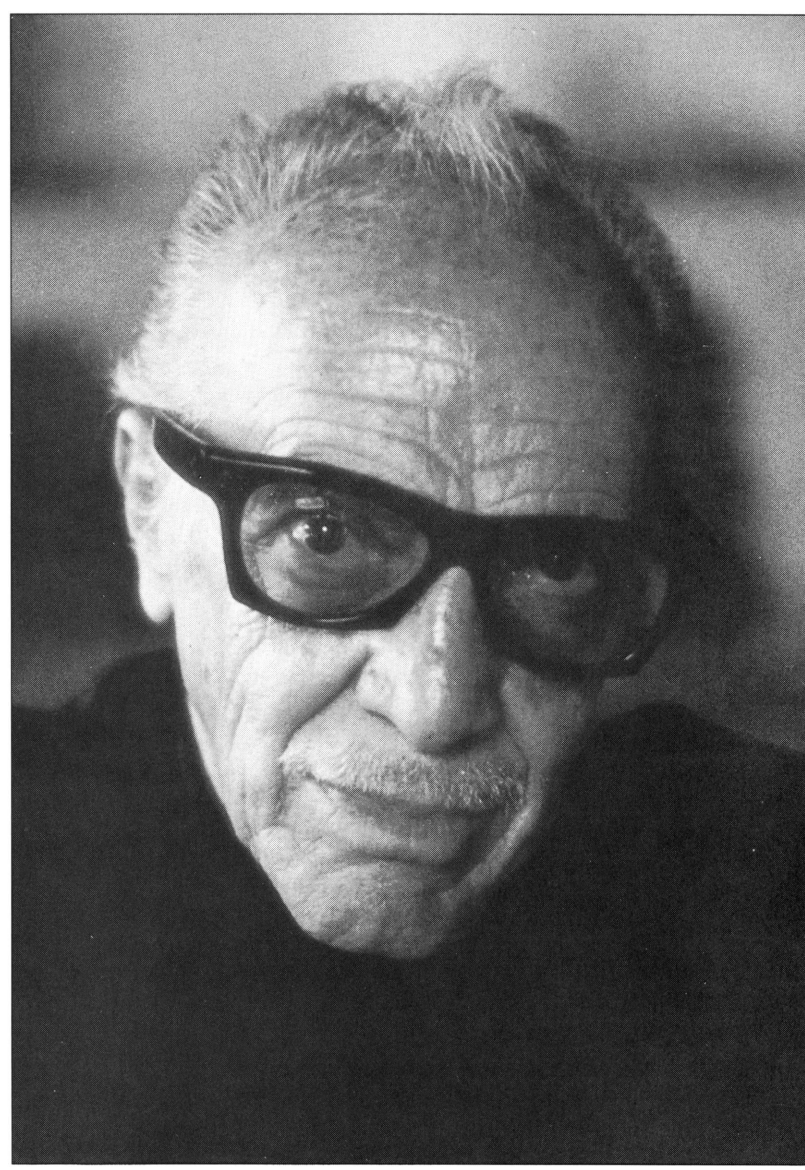
On October 10, 1991, Gabriel Figueroa was honored by a tribute from the UCLA Film and Television Archive's Mexican Cinema Project, produced in association with IMCINE and Chicanos '90. Among the many distinguished stars, collaborators and friends who honored Figueroa was fellow director of photography Stanley Cortez, ASC.

"I am delighted to be here and pay my respects to Gaby," Cortez said. "Tonight's tribute to a very fine gentleman and talented cinematographer is well-deserved. It is also in my view a tribute to my other good friend, Emilio Fernandez. Their enormous contributions established Mexico as a vital new force and influence in the cinema world. I first met Gabriel through my colleague, Gregg Toland, who often discussed with me the extraordinary potential of amigo Gabriel — and how right Gregg was! On behalf of the American Society of Cinematographers, and myself, congratulations, Gaby. We salute you and we love you."

By the time this issue goes to press, Figueroa will have received another well-deserved honor: the ASC International Achievement Award. The only previous recipients of the award are the English cinematographers Freddie Young, BSC, and Jack Cardiff, BSC. "This is the greatest honor I have received," said Figueroa, who resides in Coyoacan, Mexico. "It is a privilege to be in the company of such great cinematographers as Freddie Young and Jack Cardiff."

Born in 1907, Figueroa grew up in Mexico City, where he studied painting at the Academy of San Carlos and violin at the National Conservatory. He and his brother were orphans and they lived with their aunts until the family fortune ran dry. "I had to leave the Academy and go into the darkroom to make a living," he recalled. He took passport photos and pictures of girls in bathing suits, and documented paintings by local artists.

He entered motion pictures as a stills man soon after the advent of sound. In 1933, Howard Hawks arrived in Mexico with James Wong Howe, ASC, to shoot exteriors for the MGM production of *Viva Villa!*. Figueroa, then working for expatriate cin-

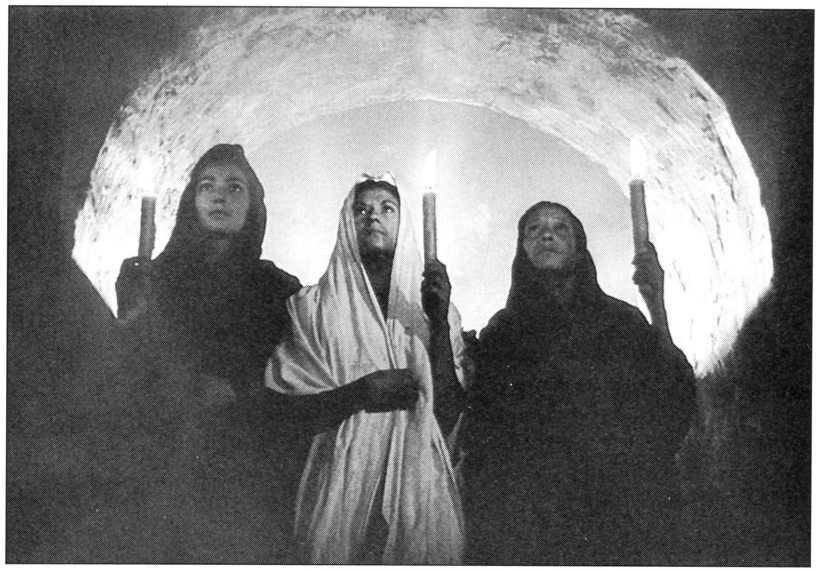


Photos courtesy Michael Donnelly

ematographer Alex Phillips, Sr., recalls the first time he got behind a movie camera: "Hawks had an assistant director who was Mexican. He called me up to tell me that they needed twenty extra cameras to help shoot a military parade for the movie. 'But there aren't twenty cameras in all of Mexico!' I told him. 'Find one,' he said. I finally managed to rent the only one available, a Bell & Howell with a hand crank. When I showed up for work, everyone else had batteries, but the Bell & Howell was a very good camera and it had a better movement than the Mitchell. I later found out that cameramen in Hollywood had discovered they could maintain the proper ryhthm for handcranking the camera by humming the 'Anvil Chorus' from 'Il Trovatore.'"

In 1935, Figueroa was sent to Hollywood by the government-funded CLASA studio as part of a program to develop Mexican cinema. "The first person I went to see was Gregg Toland because I had a letter of introduction to him from Alex Phillips. He was making *Splendor* with Miriam Hopkins and I was lucky enough to have him take me on as a student. I stood on the set and watched him work through the entire picture. He told me to see *Les Miserables*, and when I asked him how he was able to achieve certain shadows in that film, he was pleased with my observations, and revealed that they had been painted in."

Figueroa returned to Mexico the following year. In 1936, after working as an operator on three pictures for Jack Draper (another American who had relocated south of the border), he gained international recognition when his first film, *Alla' en el Rancho Grande!*, won a prize in Venice and broke box office records. From that point on, he worked steadily in Mexico, taking advantage of each free moment to go back to Hollywood to watch the cameramen work. "I enjoyed very much this contact with the photographers," he recalls, "and I admired all of them immensely."



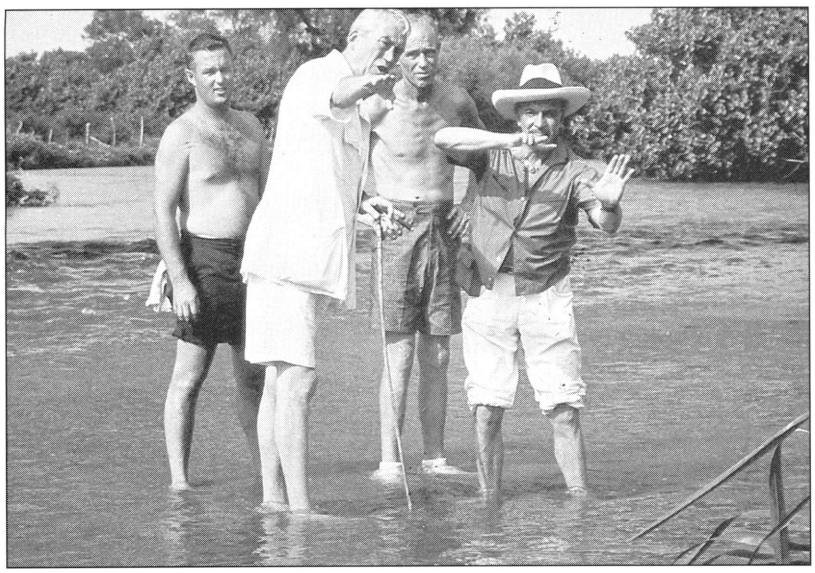
***A combination of backlight and candles lends sepulchral ambience to this scene from* The Fugitive.**

Toland continued to give him advice and critique his work. En route to Acapulco, Toland would seek him out in the studios of Mexico City and ask to see what he was working on. "Toland saw something in me I had never seen. One of the last pictures that I showed him was *Maria Candelaria*. He saw the strength of that picture and that's why he later recommended me to John Ford."

Maria Candelaria (1943) was the second in a series of classic films that Figueroa made with director Emilio "El Indio" Fernandez. The early period of their celebrated collaboration marks the beginning of Figueroa's style. "I think I have a dramatic temperament," he said. "My work has always leaned towards exterior sequences in the countryside: landscapes, mountains, rivers, the ocean." Figueroa's allegorical interpretations of these elements, in which the sculptured features of Dolores del Rio and Pedro Armendariz figured prominently, established a truly nationalistic point of view, the likes of which had only been approached in the camera work of Eisenstein and Tissé in *Que Viva Mexico! (1932)* and Paul Strand in *Tidal Wave* (1934).

In addition to what he had learned in Hollywood, Figueroa applied the force of Mexican painting and engraving to his films. He enjoyed a free exchange of ideas with many of the artists in his country, which blurred the lines between the arts. With muralist and friend Diego Rivera, Figueroa learned about color and composition. He credits another muralist, David Alfaro Siqueiros, with teaching him how to foreshorten his subjects, an effect he accomplished with the aid of Toland's technique of deep focus.

"The only painting I ever copied in my work was one by Jose Clemente Orozco," he maintained. "It was in *Fior Silvestre*, the first picture that Dolores del Rio made when she returned to Mexico from Hollywood. She invited all of her friends to the premiere and, as luck would have it, Orozco sat next to me. Well, we watched the picture, and I was waiting for the scene. When it came on the screen, he leaned forward in his chair, recognizing his work. So I grabbed his leg and said, 'Maestro, I am an honorable thief: that is from you.' To which he replied, 'But you have a perspective that I wasn't able to achieve! You must invite me to watch you work so that I can see how you obtain that perspective.'



***Figueroa wades through the angles with director John Huston on* Night of the Iguana.**

I was the only cinematographer to have such a connection with the muralists. I always found in them what I liked, and they saw my pictures, liked them and critiqued them. They said that my films were murals in movement; greater murals, because mine traveled and theirs did not."

With "Dr. Atl," the pseudonymous painter known for his theories on landscapes, Figueroa explored the effects of curvilinear space. He enhanced the organic strength of his landscapes by using a 25mm lens (to which he later added a diminishing glass) that gave a slight curve to the horizon and added a feeling of movement to the sky.

"All these artists inspired us to create a Mexican image for the cinema," he said. "Somehow we found a common basis, and I was fortunate enough to see my images accepted all over the world."

Maria Candelaria won prizes for best photography at the Cannes, Venice, and Madrid film festivals, where critics started talking about "the skies of Figueroa." *American Cinematographer* acknowledged the craftsmanship of the picture:

"Admittedly drawing on knowledge, technicians, and inspiration from Hollywood, the studios south of the border are at last evolving a cinematic style embodying the technical finish of American films plus a quality of artistic approach which is particularly their own.

"The sets [of *Maria Candelaria]* are almost painfully simple — mostly exteriors with a few adobe huts, a church, and the water-traced foliage of the region in which it is set. These simple elements the cinematographer fashioned into a film composition that is truly poetic. The exteriors achieve a stunning realism — not of a harshly documentary type, but of a rich quality that may truthfully be called rotogravure. The result is due to the correct use of heavy filters, the capable placement of reflectors, and angles that enhance the natural pictorial quality of the backgrounds."

Figueroa revealed that his use of certain filters was inspired while studying Renaissance painting: "In a book by Leonardo da Vinci called 'Treatise on Painting,' da Vinci says that more important than anything is the color of the atmosphere. 'What color [is it] if we don't see anything?' I asked myself. But I began to investigate what this color was and I began to see it on the screen. I found that by using an infra-red filter I was able to eliminate this 'smog' between the camera and the subject, giving me a much clearer image. They used this filter during the war to photograph at night, and it occurred to me to use it in the daytime."

Figueroa drew an infrared filter from its ancient leather pouch. "I bought this from the Agfa distributor in Mexico City when he was called back to Germany to fight in the war. It gave me an f2 — ASA 100 — at midday in Acapulco where the sun is even stronger than here. I later bought a set of Wratten filters and combined greens with slightly lighter reds so that I could obtain the infra-red effect in varying intensities. We had to paint the actors' lips brown so that they wouldn't appear white; otherwise, we didn't have any problems."

The photography of *Maria Candelaria* is remarkably three-dimensional. Separation of the subject and background is heightened, especially in the closeups, by the fact that the faces are brighter than the middle grey skies and darker than the white clouds against which they are framed. In an interview with Mexican historian Marguerita de Orellana, Figueroa explained that he sought to "incorporate Mexican landscape in balanced forms, chiaroscuros, half-toned skies, and the kind of immense clouds we all fear, so that the cinematography could achieve a very Mexican image through black & white."

As his prominence grew, so did his responsibility. During the labor struggles of the mid-Forties, Figueroa was called upon in the political arena. In 1944, everyone who worked in the film industry in Mexico belonged to an all-powerful union called the STIC. Soon after becoming secretary-general of a division of this union that included actors and technicians, Figueroa found himself at odds with the system: "We had a mess with the union because the people who managed the cinemas and the distribution of films were gangsters. They had control of the whole industry,

which at the time was making a lot of money. They were making things very difficult, shaking down American production companies to get more money from them or making them take more workers. [The actors] Jorge Negrete, Cantinflas and I tried to break away from them by setting up our own office, and when they tried to stop us with false documents, I published a notice in the newspaper condemning the corruption in the union.

"The Central de Trabajadores Mexicanos [the umbrella organization of Mexican labor] arranged a meeting between all of the divisions of labor. When the leader of the CTM asked me to talk, I told him everything, all of the corrupt things that these men had been doing. All of the sudden this gangster cut in: 'So tell us names, then.' 'Well you, sir,' I said, 'are at the head of the list.' He shot out of his seat and called me an idiot. I said 'Don't call me an idiot,' and as I got up he hit me; he was a big man and he wore a ring that broke my cheekbone. I went to the hospital and we left the union to form the STPC, the union that exists today.

"In the beginning we couldn't work. We had the people, but we needed a license from the government. The industry was paralyzed for at least a month. And then a leader of the electricians, a very honest man, decided to help us out. He called the Secretary of Labor and said, 'The people in cinema are taking big losses. Tonight, we are going to pull the power switch to the Central District of Mexico City for one minute. Tomorrow, two minutes, the day after, three, and so on until we are granted the right to work.' They turned off the electricity three nights in a row, and on the third day we received approval from the government to make our films."

The STPC took up headquarters in the Churubusco studios, recently constructed with funds from RKO and U.S. entre-

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***Dramatic composition lends threat to this confrontation from* Rebellion of the Hanged.**

preneur Harry Wright, and soon things returned to normal. In a strange twist of fate, Figueroa was paid a visit by the American director Raoul Walsh; the repercussions of their meeting followed Figueroa for the rest of his career. Figeuroa explains what happened: "[The gangsters] had the license to make films but we had all of the creative talent. So they called Walsh [for personnel from the U.S.] and he came into our office at the studio with one of the STIC from Tijuana. I introduced myself to him and he said to me, 'First I want to ask you a question. Why did you back up the strike of the laboratory workers in Hollywood?' And I told him, 'Because they are workers and we are workers, and in any part of the world I will give my hand to workers.' 'Who told you to?' So I told him how I was instructed to do so by the secretary at that time. 'Is he a communist?' Walsh asked. 'I don't know,' I replied. 'Why don't you go and ask him.' 'Are you?' he continued. 'That's none of your business.' We fought for a while and finally he left.

"I've never belonged to any political party, neither here nor outside of Mexico," Figueroa concluded.

With the new freedom created by the STPC, Figueroa teamed again with director Emilio Fernandez to create another masterpiece, *The Pearl.* The script was written by John Steinbeck, who later turned it into his famous novella. In 1946 it earned Figueroa another prize in Venice and in 1948 he won the award for best photography at the Hollywood Foreign Correspondents' "Golden Globe" Awards. The film, similar in theme to *Maria Candelaria,* again paid homage to Mexico's indigenous culture, making "sculptures of the Mexican Indians and infusing their landscapes with the hieratic," according to writer Jose Maria Espinasa.

Following *The Pearl,* Figueroa was paid a visit by Merian C. Cooper, producer of the original *King Kong.* "He came into the studio one day and said, 'I want to see if I can make pictures here in Mexico.' I didn't know he was checking me out and I went about my work the usual way: when Emilio [Fernandez] asked me to put the camera up high, I would say O.K. and put it on the floor. That's how we decided on the angle! We were shooting *Enamorada* and at the end of the day we invited him to see rushes. When the lights came on he asked me, 'How many days' work have we just seen?' 'One day and one night,' I replied. 'You're under contract!' he said. 'For what?' 'To photograph *The Fugitive* for John Ford."'

Having already been asked by Toland to join his crew on *The Fugitive,* Figueroa was surprised to learn that he would now be replacing him. Because of

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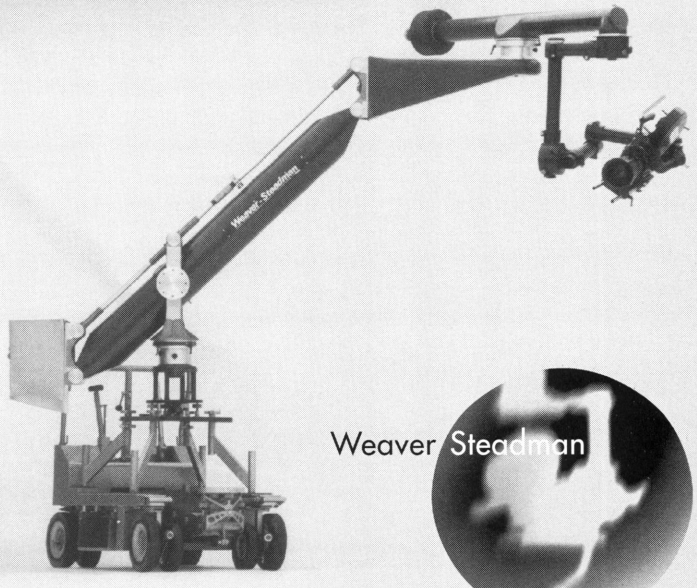

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In* Maria Candelaria, *Figueroa's allegorical interpretation of the elements marked the beginnings of his remarkable photographic style.

contract disputes with Sam Goldwyn, with whom he was under contract, Toland had to drop the film. When he apologized to Ford, the director asked him if there was anyone else who could photograph the picture with the strength of Mexican painting and engraving and Toland replied, "In Mexico there is one cameraman who is stronger than I am: Gabriel Figueroa."

Figueroa took quickly to working with Ford: "The first day of work with Ford we went to the location and he said to me, 'We begin here tomorrow. It's day. Tabasco. There's sun. Strong. Establishing shot. Put the camera where you want.' I arrived the next morning at seven and began to light everything. When Ford arrived, I asked him, 'Would you like to check out the camera angle?' He answered, 'Me? I'm only the director! But what lens do you have?' 'Forty millimeters,' I said. He replied, 'Then your frame cuts here and here.'"

Figueroa recreated the very precise gestures of the director with his hands, then threw them up in the air and said, "I still can't tell after 75 films what a lens will do! But Ford knew with tremendous precision. 'I never get behind the camera,' he said, 'nor do I see rushes. I see the faults here. I don't need to go to a projection room to see what I've done wrong.' He was as sure as that. He had a fabulous security about him. We discussed the next shot, and then for the rest of the film he let me put the camera wherever I wanted."

Ford has said that *The Fugitive* is his favorite film, especially for its photography. He immediately offered Figueroa a three-year contract, but when they attempted to shoot their second film, this time in the U.S., Figueroa was denied working papers. "I have a letter that Toland sent to me when this happened," Figueroa revealed. "He said, 'Raoul Walsh accuses you of being a communist, but there's nothing you can do about it because McCarthyism is very strong right now, above all in Hollywood.' Ford called me up and said 'I'm very sorry, they didn't grant you a permit. We'll cancel the contract.'

"He paid me the remaining three years of my contract," said Figueroa. "There was no other filmmaker who had a heart as big as Ford's."

With the success of *The Pearl* and the *The Fugitive,* Figueroa received other propositions from Hollywood through his agent Paul Kohner. In 1948 Toland died, and Figueroa was offered the remainder of his contract with Sam Goldwyn: five years with another five optioned. Figueroa took three days to think about it before turning it down. "It was a great contract, the best one in Hollywood. But I had my life here in Mexico which was precious: my wife and family, my

friendships with all of the artistic people. This was my world, and for that reason I could not accept the contract."

In Mexico, Figueroa also retained script approval. His ability to choose quality material was strengthened by his friendships with writers, most notably with B. Traven *(The Treasure of the Sierra Madre)*. He interpreted the written word with such insight that his images often replaced and outlasted the words in popular memory. Writer Carlos Monsaviais has said that "it falls to the cinematography of Gabriel Figueroa to endow the films with a coherence which juggles the dialogues to present a memorable and genuine sensitivity, the tragedy which survives the melodrama, the popular authenticity which the verbal expression is unable to affect. Through the cinematography, the literary essence becomes transparent." He adds, "Figueroa's best work is what moving pictures are all about: that which we struggle to say, but for which we cannot find the words."

John Steinbeck came back to Figueroa in 1950 with Elia Kazan to show him the script of *Viva Zapata*. "I read it and I didn't like it, because it was a kind of *Viva Villa!*" Figueroa recalled. "It didn't explain what Zapata was fighting for. I was with them for three days, and on the third day I said to Steinbeck, 'John, you've made a mistake here. It doesn't show why Zapata fought. And this other scene in which there is poetry and Zapata. What? Zapata and poetry? Impossible. This scene shouldn't be in the film.' Kazan called me and said, 'You're a very brave man to argue with John Steinbeck.' 'Yes, I know that,' I said. 'But I know more about Zapata than Steinbeck. I bet you that.'

"He hired another writer and the next year they appeared with another script. It was considerably better but I still didn't take it. They shot the film in Texas. Kazan called me one night

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and said, 'Joe McDonald [ASC] is the photographer on this picture. I told him to see your films and to follow your style, and he's doing it pretty well. Only there's one thing that they didn't teach him. Could you tell me how you shoot your night exteriors?' I agreed and told him to put a very light fog filter on the lens — this everybody was doing in Hollywood for night — but then I told him to underexpose the film to get the grain of the film. That opens the window of the grain of the film."

He added, "I was always experimenting; Toland had put this in my head. On *Rio Escondido* I changed the lab's tonal range down toward the black hues. It's as if Aida's aria had been written in the key of G and I had it transposed into the key of C and had it sung by a bass. It's the same thing. The range was 6.5 and I changed it to 4. I had to illuminate the white shirts with sun reflectors to keep them from turning milky, but I got the most beautiful blacks you've ever seen."

During the Fifties and early Sixties Figueroa stayed away from Hollywood and made seven films with Luis Buñuel, among them *Los Olvidados*, *Nazarin*, and *The Exterminating Angel*. Figueroa changed his style dramatically to accommodate Buñuel's sparse and sober sensibilities. "I found the trick for working with Luis," Figueroa has said. "All you have to do is plant the camera in front of a beautiful landscape with magnificent clouds and marvelous flowers, and when you're ready to shoot, he turns the camera 180 degrees and films a dirty street with dogs and people throwing rocks at each other!"

In 1964, John Huston enlisted Figueroa to shoot Tennessee Williams' *Night of the Iguana*. Believing that Huston worked in a manner similar to Ford's, Figueroa was surprised to find out that Huston had very specific ideas about the way he wanted the film shot. "I didn't have much input, but we became good friends and I was nominated for an Oscar. Before the ceremony I ran into John Ford. He said to me: 'I saw *Night of the Iguana* but I didn't see you in it.' He was right."

The late Sixties provided Figueroa with two opportunities to work with other American directors: Don Siegel on *Two Mules for Sister Sarah* and Brian Hutton on *Kelly's Heroes*. "When I went to Hollywood to prepare for *Two Mules for Sister Sarah*, the head photographer at Universal said to me 'Look, don't ever go below a 4.5.' 'Anything else?' I asked him. 'No — careful with the red filters.'

"*Kelly's Heroes* was more than sixty percent night-for-night. To give me the exposure I needed for the battle scenes I came up with an idea to simulate lightning and mortar bursts. The design was based on the old flash used for stills. I asked my key grip to build me a compressor with a gas flame above it and fill it with magnesium. When the magnesium was forced upwards, it exploded, giving me a 4.5 — 100 ASA — at forty yards. We lined up three of these, 25 meters apart, and when I gave word, they exploded in unison, giving off a tremendous amount of light."

Figueroa shot his most recent film in 1983, teaming again with John Huston on *Under the Volcano*. "The film was miscast and the Steadicam made it impossible for me to check my framing. But Huston liked it. He asked me to shoot *Prizzi's Honor*, but I was denied working papers again."

Though he never retired, Figueroa stopped making films by default. "The scripts I was offered didn't interest me," he said. 'I was asked to do *Rambo 2* — it was shot in Mexico — but I turned it down."

He now spends most of his time with his family, making occasional honorary appearances at film festivals around the world. His work continues to influence and inspire viewers, and his images remain part of the common memory. Nobel Prize-winning author Carlos Fuentes says of Figueroa's Mexico:

"The beauty is there, it is real, but Figueroa magnifies it, giving it space to ponder itself, deform itself, perhaps even to get lost in itself. What's more is that the beauty of Figueroa's images doesn't only hide the will of the craftsman but stresses an unwillingness to reflect reality. Instead of adding these images to the world, he hands them back with a life of their own: not just an impossible duplicate copy. The actual reality on which his images are based will one day cease to be real. . . and then the metamorphoses of art will become the true reality: we'll see Figueroa's Mexico and not the one that really existed. Truth is always warring with facts like these."

At home, Figueroa stops to point out some of his treasures: paintings by well-known Mexican artists such as Rivera and Tamayo, alongside those by his wife, Antonieta; silk-screened prints that his photographer son had made from some of the four-thousand light tests Figueroa had saved; a discreet nude of Dolores del Rio hanging above a hidden bar — all pieces of a world endowed by one man's vision.

Figueroa was awarded the Premio Nacional de Artes in 1977, the highest honor in Mexican arts. In his reception speech, he stated: "By transfiguring reality with a camera, reality transfigured me, and made me grow as a man among men. I am certain that if I have any merit, it is knowing how to make use of my eyes, which guide the camera in its task of capturing not only colors, lights and shadows, but the movement of life itself."

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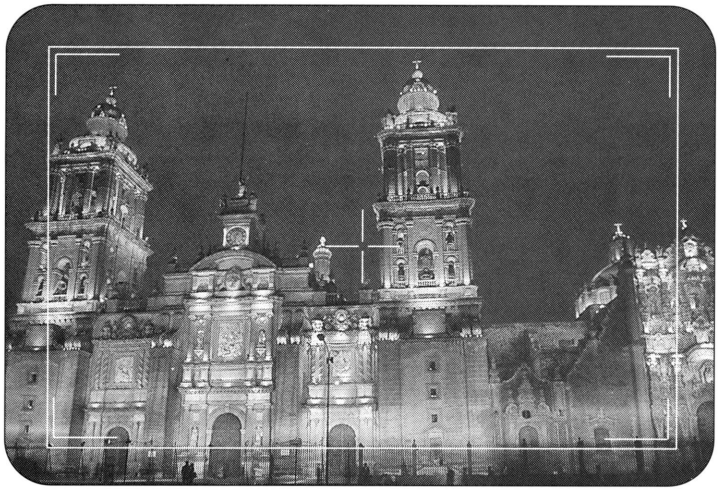

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Creating Another *Miracle on 34th Street*

Cinematographer Julio Macat adds vintage colors to modern rebirth of Christmas classic.

by Bob Fisher

Miracle on 34th Street is like an official part of Christmas; everyone seems to have cherished memories of the 1947 black & white film that gave Kris Kringle a face.

The original *Miracle on 34th Street* was produced 10 years before cinematographer Julio Macat was born in Argentina, but he nurtures warm memories of seeing the film on television. "I remember loving that little girl and really liking Kris Kringle," he recalls. "I couldn't imagine a better Santa Claus. Those images stuck with me."

The idea of creating a contemporary version of the classic did not intimidate Macat. "I knew John Hughes was planning to rewrite the script for *Miracle*," Macat says. "I also knew it would be a tough act to follow, but everyone involved with this project knew that. John is a very good writer, and this is the kind of film I have always dreamed about shooting. I met Les Mayfield when he was hired to direct it, and we hit it off."

If you liked the emotions which run through the fabric of *Miracle on 34th Street*, chances are that you have a little bit of Don Quixote in your soul, and believe that impossible dreams can come true. Macat is a living testament to the sentiment. When his family emigrated from Argentina in 1969, the 13-year-old already had an impossible dream in mind: he wanted to make movies. "My mother saw three movies a week in Argentina," he explains. "She loved musicals. We spoke about movies every day."

Macat enrolled in film school at UCLA, and planned to pursue a career in acting. But he eventually decided on another career track, and went to work for a camera rental company. Within three years, Macat was working with Mario Tosi, ASC, shooting commercials. He also operated for Chris Menges, BSC *(Shy People)* and Allan Hume, BSC

(Runaway Train), and compiled many commercial and music videos credits. Macat came of age as a cinematographer when MTV was shifting into high gear. He shot a couple of low-budget films before he was 30, then was hired by his friend, director Andrei Konchalovsky, to shoot second unit for *Tango and Cash*. That led to *Home Alone, Home Alone 2: Lost In New York, Only the Lonely* and *Ace Ventura: Pet Detective*.

For this remake — starring Sir Richard Attenborough, Elizabeth Perkins, Dylan McDermott, Mara Wilson, Joss Ackland, William Windom, Robert Prosky, J.T. Walsh, Jack McGee and James Remar — Macat had the luxury of 10 weeks of prep because the schedule was pushed back several times. He invested much of that time in talks with production designer Doug Kraner and costumer Kathy O'Rear. Their help was essential in controlling the color palette he envisioned. In his search for a way to pay homage to the original film, Macat studied vintage black & white movies and piles of tinted still photos and Christmas cards from the 1940s.

Macat explains that he "knew that people would hate the idea of someone remaking this film, so we tried to create a likable personality for it. We picked tones from the 1940s. One color fascinated us and kept appearing in our choice. We called it an 'alabaster tone.' It was creamy, like an old picture postcard.

"I didn't want to let any color slip into the story by accident," he says. "Believe it or not, that happens quite often on movies. You shoot a scene with 300 to 400 extras, and inevitably, some of them are wearing very bright colors or blue jeans. Usually, it's a scene where you didn't want

Photos by Phillip Caruso and Michael Weinstein, courtesy of 20th Century Fox

Opposite: ***Cinematographer Julio Macat talks f/stops with young star Mara Wilson.*** **This page, top:** ***Staging the fictional Christmas parade proved a logistical test.*** **Bottom:** ***Kris Kringle (Sir Richard Attenborough) trundles past the crowd, armed with a bag of toys.***

blue or other colors that are too vibrant on the screen. Film just loves to grab blue."

Macat wanted to stay on the warm side, avoiding blues and strong vibrant oranges and reds. The sets verged on being monochromatic, with dominant tones of green and grey. Red was used sparingly — e.g., in Santa's outfit.

Macat explained the alabaster tonality that fascinated him to Don Donici at DuArt Labs in New York. He shot some tests and had them printed in different increments of green. "Green is tough," Macat says, "because as soon as you get it onto skin tones, people look sick. It's a fine line; two points look okay, but three points are uncomplimentary to the actors. The last thing we wanted to do was to obscure the natural beauty of someone like Elizabeth Perkins."

His investment in preplanning with Kraner paid dividends. "When you have a film like this with a lot of sets and extras, sometimes the color schemes you planned get lost via a process

I call 'adding in a panic,'" Macat says. "You arrive on the set, and something is darker or lighter, and the colors start to clash, or a color you talked about not using is in the dressing. Things sneak in. That never happened on this film. Doug (Kraner) controlled the color scheme of the sets, and that discipline trickled down to his crew. If a prop didn't fit into our color scheme, he was really adamant about getting it off the set. It was the same with Kathy O'Rear and the costumes. She has impeccable taste and a great understanding of her craft, and she was invaluable in helping to control the textures and tonalities.

"When I was researching colors, I pulled pages from magazines, photos and tones I thought were appropriate and could be used to instigate reactions," Macat says. "I kept them in folders. I showed them to Doug when we first started talking. I knew I had a partner when I noticed that Doug had actually pulled the same pictures from the same magazine. Once Doug, Kathy and I came up with a logical plan for our approach, we communicated our visual ideas to Les by showing him the pictures. This was an effective language for us."

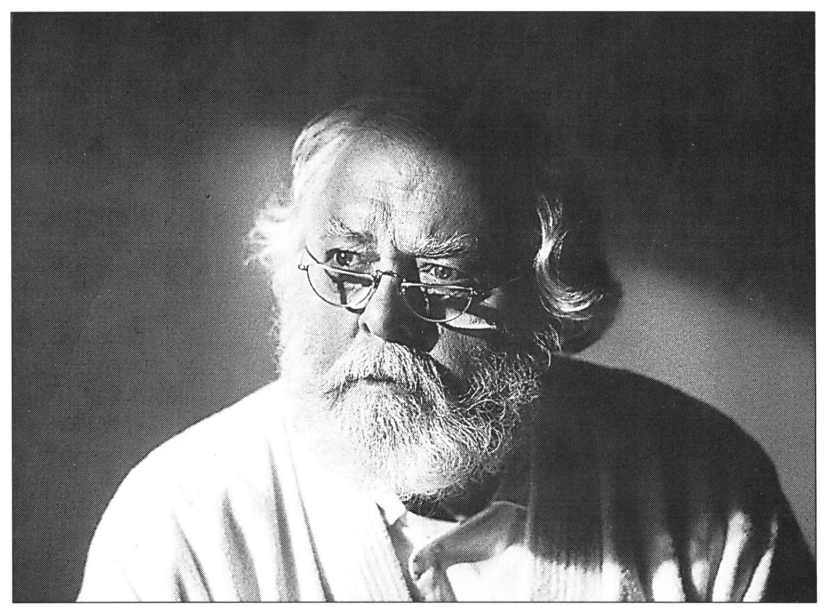
Macat's palette subtracted certain colors from most of the film without creating a desaturated look. That way, when he added those colors to a scene, the impact had much more punch. One of the payoffs for subtracting overall blue was the

Committed to a sanitarium, Kringle retains his magical aura, with the help of Macat's symbolic source lighting.

visual impact it gave as it reappears, especially in the form of McDermott's eyes. "Dylan's eyes are pure blue," Macat says. "I'll never forget the moment when, after three or four days in our monochromatic world, Dylan's close-up came up on the screen. His blue eyes were stunning. We had temporarily forgotten that side of the color spectrum, and it validated everything we were trying to do."

He shot most daylight exteriors with the 50-speed Eastman EXR 5245 film, an ultra-fine-grain film balanced for daylight exposure. New York and Chicago had waves of very clear sky, but the sky could also be very bluish on overcast days. When it was overcast, Macat pulled a little blue out of the image by putting an 81 EF filter on the camera lens.

Macat continues, "In the 1940s, a lot of thought was given to finding the best look for the stars. Actors on contract with studios were often photographed by the same cinematographers. We spent a couple of days testing different lighting styles with the actors. Everybody has features and idiosyncrasies that you can enhance. We tested hard, soft, and directional lighting and found a visual signature that would be complimentary for each actor. I used 1940s backlighting, and lit all of the close-ups as much as possible.



"I can't say enough great things about Doug Kraner," he adds. "It's just so important to have that connection with the production designer. We would set up shots, and if I noticed that his sets didn't translate to a little corner we were shooting in, or if something didn't seem to belong there, we would talk about it and make an adjustment."

Kraner made a point of being there the first time Macat shot a scene on a new set. Macat always asked what Kraner liked best and least within the set. "It was a great working relationship," says Macat. "Knowing more about each others' craft makes one better individually.

"We had a location at a church in Chicago," Macat recalls. "It was supposed to be St. Peter's in New York. It was beautiful, but the side walls were horrible. The way the scene was blocked, the audience would have seen those ugly cement walls as the background of the close-ups. Doug told me that he hated those walls, so we used candlelight and shadows to mask that area. I kept that area dark, and insinuated things the audience only saw in their minds. That approach was better than saying, 'Well, that's how the church really is,' and just shooting it. That happens in some cases."

Miracle on 34th Street was filmed in 1.85:1 format. There was some talk about shooting in wide-screen anamorphic format, but anamorphic didn't fit the look of the movie, and it was too far removed from the 1.33:1 aspect ratio in which the original 1947 version was filmed. The choice of format defined itself once there was a logic for visualizing the story as an intimate film.

However, one important scene was shot in the 65mm format. Kris Kringle, dressed in a beautiful outfit, has been hired to

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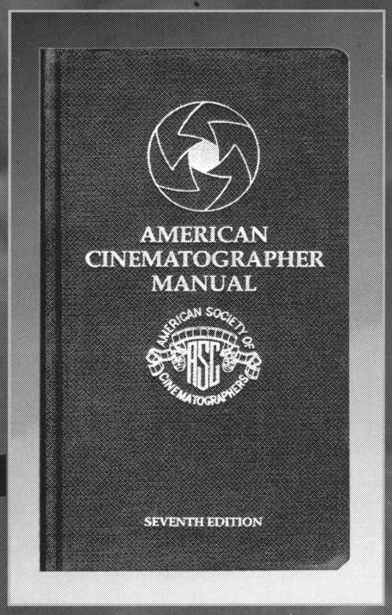

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Amassing Digital Crowds (and Snowflakes) for *Miracle on 34th Street*

Want to create a miracle? Try filming 700 extras on a parking lot in Chicago, and turning them into tens of thousands of people jamming Times Square. Then make it snow on a cloudless day. These cinematic feats are integral to John Hughes' remake of the 1947 classic film *Miracle on 34th Street*.

The huge crowd was achieved by digitally pasting images of the extras together and creating layered composites with background plates filmed in New York. The snow is also digital. The illusions were conjured up by Greg McMurry, vice president of Los Angeles-based VIFX, a visual effects company that lists such credits as *Speed, Timecop, Clear and Present Danger, Demolition Man* and *Batman Returns*.

Director Les Mayfield weaved the four- to six-second snippets of film into the fabric of a crucial series of scenes before, during and after the trial of Kris Kringle. "We had to link events happening in the story to the crowd footage," says McMurry. "For example, when word about something happening at the trial leaks into the streets, you can see the reaction rippling through the crowd, beginning with those closest to the courtroom."

Photos courtesy of Video Image FX

Digital magic helped turn an ordinary New York skyline into a twinkling winter wonderland.

McMurry shot background plates for the crowd scenes looking up and down streets at Times Square, Madison Avenue, and Central Park West, from multiple angles. There was no budget for motion control, and the plates weren't static. "In one shot, we panned off the frame, came onto another plate, and looked down a third street 180 degrees in another direction," McMurry says. "Later, we digitally glued three plates together in that one shot."

The extras were filmed in Chicago in a large parking lot next to a baseball stadium. A stairwell at the stadium allowed McMurry to shoot from different elevations matching the plate shots. "We shot all day to get the coverage needed from different elevations, directions and angles, " he says. "We marked the ground to match the shapes of the streets where the plates were filmed, and we moved people around after each close-up shot. That way, the audience wouldn't glimpse familiar faces after we pasted them together in the foreground."

Most takes were only a few seconds long. Then McMurry moved the crowd and camera. With each move, he measured the angle of photography to match the plate. The filmmakers shot all of the elements needed to fill the spaces in each plate.

All of the backgrounds and composite elements were filmed in VistaVision format, the latter against green-screen backgrounds. McMurry used the large format to gain flexibility for placing elements on the frame.

The plates and composite elements were recorded on 250-speed Eastman 5297 daylight-balanced film, and processed at DeLuxe Labs. VIFX used a Rank telecine to transfer the film to video, and created rough cuts of effects scenes at TV resolution.

"If an actor is looking out a window, the visual perspective of the insert has to be from that point of view," he says. "Les (Mayfield) was specific about how visual effects shots had to blend with the artistic continuity of the scene. We'd show him an insert, get his reactions, and, if necessary, make adjustments. That's the advantage of doing the low-res work upfront."

VIFX used a custom digital film scanner to convert the frames selected by McMurry to digital picture files. "We designed and built the scanner," says McMurry. "It uses a CCD sensor and enables us to capture image information on the VistaVision frame, including resolution, tonality and colors, and convert that information to digital files."

VIFX used a combination of its own custom software and Flame with a Silicon Graphics

Indigo workstation for layering picture elements with the background plates. Some images were reduced in size and altered in perspective before they were patched into the middle of the crowd. CGI shapes simulated people in the background of some scenes.

The digital artist added a number of creative touches. In one scene, reflections of the crowd were composited onto the black glass side of a building. An interesting distortion of the images makes the effect even more realistic.

The film also features a dramatic aerial scene in which it appears as if 100,000 people have converged in the heart of Manhattan. A few vehicles are moving slowly at one edge of the crowd. The crowd and vehicles are animated CGI images, but only a trained eye can tell the difference.

The visual effects team watched hours of movies with snow scenes to get a feeling for what would work and what wouldn't. They analyzed the motion of falling snowflakes and experimented with creating random patterns of flakes swirling in the wind. The digital artist also scaled the size and brightness of each flake to create a sense of depth of field; smaller flakes were made to look farther away.

"We also created an interesting image of Kris Kringle walking on a street in front of Central Park," McMurry says. "We shot it on a summer evening in Chicago. Our computer artist made the background look like Central Park in winter. The shot includes two street lamps used as props. The light from the lamps didn't look right, so the digital artist added hot spots and shadows to make it feel more realistic."

The final digital pictures were output with a Solitaire digital film recorder at VIFX onto Eastman EXR ultra-fine-grain color negative 5245.

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Photo Peter Sorel, *Outbreak* © Warner Bros.

Michael Ballhaus & Magnum on the set of *Outbreak* from Warner Bros.

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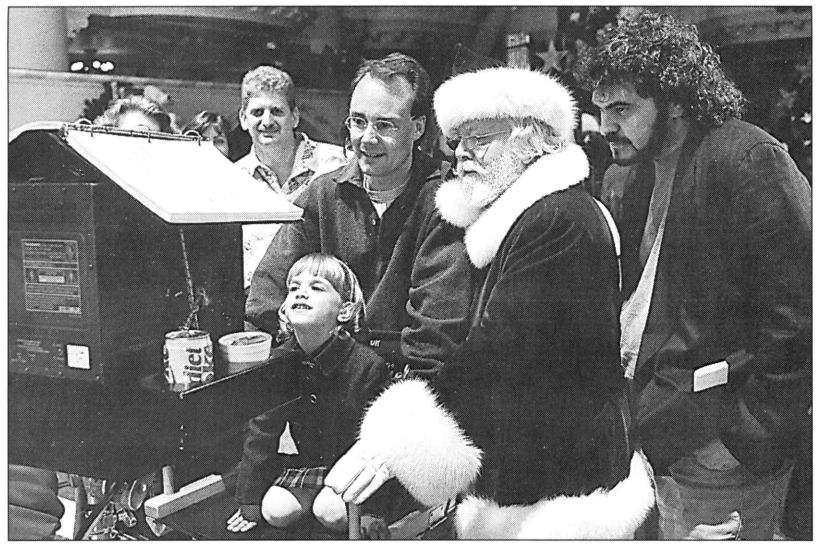

Sami Krieger, director Les Mayfield, Attenborough and Macat join Mara Wilson at the video monitor.

be the new Santa Claus at Cole's, and in a tense meeting with Perkins' character he addresses her lack of faith in the concept of St. Nicholas. "If I can get you to believe in me, there is hope," he says. Kringle then walks into his Santa Village world, where mothers bring their children to meet him. Macat wanted this scene to pop off the screen and serve as a visual punchline that countered the monochrome setting. He reasoned that if there was a 70mm release in key theaters, the 65mm footage would visually emphasize that something beyond the boundaries of everyday reality was happening in the scene.

"The logic was right," he says. "The colors are vibrant, and the images are bigger than life. There is only one other place in the story, when the little girl gets her wish, where we emphasized vibrant colors. They are literally golden." Macat got a Christmas present of his own when Fox agreed to do a 70mm print for the New York premiere at Radio City Music Hall.

The original story's two rival stores, with their contrasting warm and cold personalities, remain, although Macy's, which played a prominent role in the 1947 version, declined to participate and was replaced by the fictional Cole's Department Store. Cole's adversary is the Shopper's Express, a huge chain with thousands of outlets. Macat explains, "They don't care about the warmth or meaning of the holidays. They just care about sales. The characters are almost cartoonish."

The tale's main characters are also basically the same. Perkins has the role originally essayed by Maureen O'Hara; Dylan McDermott re-creates John Payne's role as the boyfriend; and Attenborough takes over for Edmund Gwenn as Kris Kringle. There was serious thought to casting a boy in the part originally portrayed by Natalie Wood, but Mayfield and Hughes decided that such a move would tamper with the integrity of the story. He eventually cast Mara Wilson *(Mrs. Doubtfire)* in the role. "The chemistry between Sir Richard and Mara was great," says Macat. "That's a gift for any cinematographer. One is always inspired in the photography when there is emotion."

Although the story is set in New York around Christmas, most of the movie was filmed in April and May in Chicago, mainly on stages. As a result, Macat found himself working with undeniably healthy foliage in what is supposed to be the dead of winter. For a night sequence in which Kringle goes to the zoo to visit the reindeer, Macat brought in three fog machines and planted a few bare trees in strategic places. He selectively added light to the dead trees and a few other background areas using 20Ks. Fluorescent lights on the ground gave a glow to the rolling fog.

The production company spent only five days in New York, filming scenes which establish the setting. The most complicated was the Christmas parade. Some background filming was completed during the real-life parade, but when Macy's decided against participating in the film, the department store refused to give the production company rights to use the footage, forcing the filmmakers to create their own parade. The city closed 72nd to 78th streets and Central Park West to traffic for four days. Besides some 2,000 extras, there were floats, balloons and marching bands.

In a scene shot in Central Park during the darkest part of the night, Kris Kringle is shown babysitting the little girl for the first time. He brings out a tiny music box, whose tune segues the scene to a choreographed ice-skating sequence at Wohlman's rink. Here Macat was shooting with a 14mm lens on the camera, covering a quarter of the park. The conventional way of lighting such a large night exterior scene is to use large crosslights on two opposing sides of the scene, but Macat felt that such an approach would make the park look too much like a baseball stadium. Instead, after Macat had extensive discussions with gaffer Mike Moyer, the crew pre-rigged small units under trees and varied the intensities to create some separation.

"In uplighting the trees, we had to make certain that the tree trunks weren't too brightly lit relative to their positions," he explains. "Mike is an excellent gaffer, and he loves a challenge. Illuminating a huge area like this without making it look 'lit' excited both of us. It's night, so it's okay to be selective about what you show the audience. Your eye

has to feel as if it's seeing enough so it can imagine the rest. To balance for what is not lit, it's okay to light some areas brighter than normal, especially on the edges of the frame."

For this sequence, filmed at about one in the morning, Macat shot a quick test with Eastman Kodak's EXR 5298 500-speed film, which had not yet come onto the market. "I don't like to shoot wide open with shallow depth of field," he says, "because it's very difficult for any film in those circumstances to bite into the shadows and retain rich blacks. But I was stuck in a situation where we were going to be shooting this huge night exterior at T2. I wanted to hold rich blacks right through release printing. I decided not to open up all the way. Since 98 is a finer-grain film, it enabled us to push the latitude a bit. We were shooting at stops T2.5 and T2.3. We were shooting in the dark, and the lens wasn't wide open, but the film was still seeing details in the shadows."

Most of the rest of the time in New York was spent on establishing shots. Mayfield and Macat agreed that it was important to open the film with believable locations, and for most of those four days they were racing the clock to get in as much as possible. One day, they lost the light while shooting a scene in the middle of Central Park West, so Macat lit the scene to emulate daylight. "It had an interesting look," he says, "as if it was shot on a soundstage — almost like those 1940s films. As cameramen, we have to use logic to justify those circumstances that are beyond our control. If we didn't, we would probably just become very frustrated and miserable.

"I spent a lot of time thinking about the pacing of the film," Macat says. "Not a lot of time goes by without something happening. Performances obviously drive this story, but from our perspective we have to keep it visually interesting. I thought a movie like this needed aggressive camera movement to keep the audience engaged."

Macat started planning his camera choreography by thinking about the places where the camera *shouldn't* move. He defined those moments by breaking down the script. The rest of the time, the camera was flowing, setting up the moments when he and Mayfield wanted the audience to stop and listen, or simply to watch.

In a quiet scene designed to give a glimpse into Santa's soul, Kringle sits alone on the edge of a bed next to a window in an arrangement similar to a black & white portrait. Macat used just two lights placed outside the window of the white room, and removed all of the bounce light from the interior by surrounding the actor with a light-absorbing black material. "Normally, the light would be bouncing around a white room like that," he says, "but by lighting very selectively, we focused the attention of the audience to a still-life of our actor. It was a very strong visual and very sad. It seemed right to slowly pull back for a great musical cue. That's one of my favorite shots in the film.

"I watched how the actors blocked scenes, and it really tells you where to put the camera. When you think about it, the trick is to watch the actors," he says. "That tells you if you have to be wider, or be able to see something important at a certain moment. I think a good director, with his input, will let the actors find out where they need to go to play the scene so it works. The biggest mistake we can all make is to try to implement pre-set ideas before having rehearsed and worked out scenes with actors."

Shooting Kringle head-on, Macat used little "pings" of eyelight reminiscent of classic 1940s photography. At other times, on Mayfield's strong recommendation, he shot Attenborough's close-ups tighter

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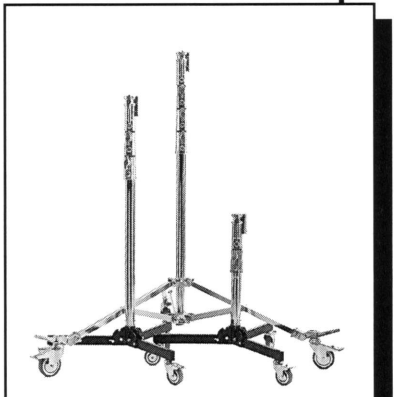

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than normal to draw the audience into more intimate contact with him. For the scenes in which Kringle is committed to a sanitarium, Macat chose not to light his eyes at all.

Macat shot with a Panaflex camera, mainly on a dolly. There were just a few remote camera shots, to allow the camera to float above scenes. Much of the film was seen through the eye of a 29mm lens. "On each film, you wind up developing a preference for a lens that you use all the time," Macat says. "That preference is dictated by the sets, and by how many people are in a given shot. The 29mm was actually a Primo zoom lens, which I used occasionally for variable focal lengths if I was stuck in a corner, and needed a couple of extra millimeters here and there to better control the framing or to adjust the size on a move. In addition to the 29mm, we also used 75mm and 100mm lenses a lot for the close-ups. That's pretty standard."

His basic film was the Eastman EXR 5293, which gave him richer contrast and a relatively lower level of grain than 500-speed films yield. More importantly, he finds it easier to cancel light with a E.I. 250 film. "By using a slower exposure index, you can be more selective about what you light, because your blacks are blacker and spill light is much less likely to desaturate the blacks. That enables you to light more things individually.

"I was using very contrasty lighting, and I think that requires a strong amount of diffusion to get the edges off," he continues. "I had a net in front of the lens, with another behind it, and I also used a ProMist filter. But I don't think the film has a diffused look. I wanted the actors to look good. This is a real character-driven movie, and I felt that the photography should reflect the performances and enhance their great looks."

One of Macat's favorite scenes is one in which a little girl is in line to see Santa in Cole's Department Store. Her mother says, "Santa, she just wants to sit on your lap for a minute because she's deaf. She can't talk." When the girl sits in his lap, he asks her name in sign language. He then asks what she wants, but she doesn't answer. Santa decides to serenade her by signing "Jingle Bells."

"It was a beautiful scene," Macat says. "They were speaking with their eyes. It's what the film is about.

"We simply tried to bring a little hope into [the audience's] lives. It's a movie about believing in Santa Claus. We went back to the basics. We want the viewers to leave the theater with a good feeling."

Macat notes that working with a living legend like Attenborough boosted everyone's performance. "You could feel his spirit and energy on the set," Macat says. "No one wanted to disappoint him. I feel really good about his close-ups. It meant a lot to me when he liked them. How can you disappoint this man, who didn't have to be there? The last thing he needs to do is play Kris Kringle in a movie, so you know he's doing it because he loves it. His wife was there, and they went to dailies religiously every day."

Among the many memories Macat took from this film, one in particular stands out. "Sir Richard and I were just talking one day and he said, 'There's one thing that makes me really sad. I look at you young filmmakers, and I would give anything to have another 20 years in this business to see where it is going. I see how wonderful things are now with all of the new technology, and it's so exciting. My only regret is not having a little bit more time just to see where it takes us.'"

Digital Artists: Reinventing Electronic Media

MIT Media Lab symposium looks to the future of entertainment and expression.

by Frank Beacham

A major challenge facing creative artists using interactive digital technology is to break down traditional information structures and create new works that redefine the relationship between performers and their audience.

This and other opinions about interactive media came from a wide range of creative and technical leaders assembled for a day-long symposium (Oct. 20) on "Digital Expression" at the Media Laboratory at the Massachusetts Institute of Technology in Cambridge, MA.

Tod Machover, a composer and associate professor in the Opera of the Future Group at the Media Lab, said, "To make this revolution in digital expression, we need to bring together a much larger group of people than has ever been connected before.

"We finally have technology that is cheap enough to be available to everybody and technology that is easy enough to use so that one does not need to be an expert as an artist or member of the public to explore or make things," said Machover. "That's a fundamental change."

Peter Sellars, a director of theater, opera and film, said artists "must break out of the official information structure" to find new ways to express important subjects that mainstream media refuses to address.

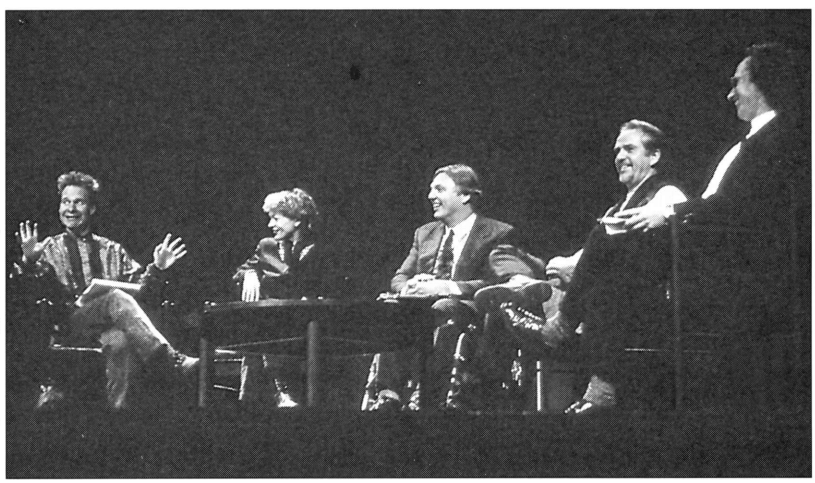

Photo by Webb Chappell, courtesy of MIT Media Lab

Director Peter Sellars offers a mirthful bon mot about the benefits of future technology, to the delight of his fellow panelists at the MIT symposium: performance artist Laurie Anderson, ABC News correspondent and panel moderator John Hockenberry, performer/composer Peter Gabriel and composer/Media Lab associate professor Tod Machover.

"You get the feeling that huge parts of human experience are going undocumented and unrecognized," said Sellars. "Aristotle wrote about the attempts to touch the totality of an experience. As human beings, we are complex, divided and multilayered. Therefore, what satisfies us is complex, multilayered and has all these built-in conflicts just as we do. How do we set up [new media] structures that show how we really feel?"

> **"The whole point about virtual reality is that it is virtually real, not really real. Technology cannot replace the seeing, the hearing and the experiencing of art."**
>
> **— Jane Alexander, Chairman, NEA**

Current mass media, said Sellars, reflects only a single voice and "a very narrow group of people are creating this insane gridlock" on information about human experience. "We are aware that there are many, many voices that we don't hear today at all. The *CBS Evening News* represents only one voice," the director said.

Performance artist Laurie Anderson said it is important that creators for the new media don't make the mistake of accepting the same ratings and income standards as today's mass media. "We don't have to use the same model as media," she said. "Don't begin to think 'the more people who like it, the better it is.'" She said CD-ROM producers are inventing a special and intimate relationship with their audiences.

Performer and composer Peter Gabriel, who earlier this year released a critically acclaimed CD-ROM titled *Xplora*, said he considered himself "a designer of experiences." Gabriel said he is encouraged that the technology is moving communications from broadcasting to narrowcasting and envisions a day when average people will use interactive media to enhance their own creativity.

ABC News correspondent John Hockenberry, moderator for the event, offered some personal insight about interactive CD-ROMs. "A CD-ROM is kind of a vast house, and when you explore it you find that people have been in there before, and that most of those people were technicians and engineers," said Hockenberry. "When you are in a CD-ROM you get the impression you are in a haunted house, but can never talk to the ghost. And in the end it's not as satisfying and not as direct an experience as it purports to be. That's the wall designers are up against."

There was some disagreement among the artists as to how much context audiences need when navigating a virtual sea of information.

The ability to wander and discover information through personal experience gives the new technology an "untamed quality," argued Sellars. "To just meander is one of the pleasures of life."

To have the audience making wrong turns through the information "is exactly the point," Sellars continued. "That's where the juice is."

Hundreds of years ago, he said, people in search of knowledge went on personal pilgrimages for information. The process, he said, could take years. By not having the information at their fingertips, there was experience attached to the search that made the finding of the information far more meaningful. "The actual act of finding something had value," he said. "It was a beautiful thing because when you found something, it meant something.

"Now we are getting all this information with no experience attached to it," said Sellars. "Where there is no pilgrimage, the information itself is debased, devalued and dehumanized. In a sense, the ratio of experience to information content is radically altered. What's irritating about the age of information is that it creates this yuppie denial of experience. We have everything at our fingertips, but we don't value anything."

Machover challenged Sellars' view that the artist can let the audience find its own way through the new media thicket. "The role of the artist is to set up environments to force people to learn something important," Machover retorted. If context is not set for the audience, he said, the audience will get lost.

Machover used the term "active meaning" to describe the intimate relationship between content and tools used by the audience. He noted that the clear boundary between artist and audience blurs when the same device can be used to perform, entertain or instruct.

In a section on new technology, Neil Gershenfeld, an assistant professor in the Physics and Media Group at the Lab, said electronic musical instrument technology is nearing the point where it will soon be possible to build a digital Stradivarius violin. In a live stage performance later in the day, Penn & Teller, the magic/comedy act, used a musical chair designed at the Media Lab to demonstrate some advanced new interactive musical interfaces.

Nolan Bushnell, chairman of OCTus, founder of Atari and a video game pioneer, predicted that the next wave in the video game business will be "millions of people, playing and cooperating with millions of people" on a global scale. He said there will be "cyberspace teams" competing on global networks.

Douglas Trumbull, vice chairman of Imax Corp. and president and CEO of Ridefilm Corp. said that a new generation of interactive theme park simulators allows the violation of space and time to create an imaginary experience for participants. "Using this technology we can absolutely overcome any individual's ability to deny what's going on. It's very powerful. I'm not just talking about physically, but emotionally and intellectually," Trumbull said of the realistic simulations.

In recent months, Trumbull said, his company has acquired the ability to seamlessly blend computer graphics, miniatures and live action into the imagery of a simulator. He showed models of how three compact simulators can be placed into the space of one small multiplex movie theater.

"The movie industry is not as good as it's made out to be," said Trumbull. "Movie houses are looking to expand the experience with an interactive experience." He said the first 3-D Imax film with 3-D sound will open early next year at the new Sony Imax theater in New York City.

Trumbull told the audience that his ultimate dream in filmmaking is now coming true. "It's having at the disposal of filmmakers and creative people worldwide the ability to make movie experiences that are absolutely overwhelming," Trumbull said. "It's much bigger, much better, much higher quality than we ever had with *2001: A Space Odyssey*. Now it's time for some creative talent to step forward and figure out what to do with this technology.

"I don't think we want to make *Indiana Jones* or *Star Wars* in the new medium," he continued. "We have to actually create a whole new genre of film entertainment that is based upon the issues of immersion and virtuality."

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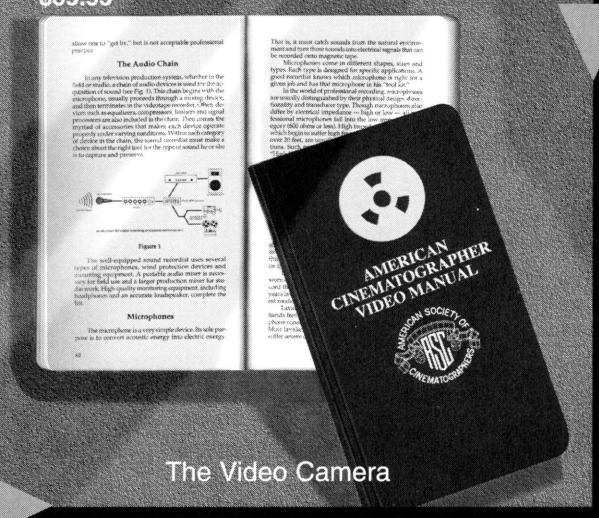

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Composer/producer Quincy Jones echoed the recurring notion during the symposium that nobody really knows the future of interactive digital technology. "I've met most of the players and they are all as healthily confused as they should be," Jones said. "This is a revolutionary time. Our juices are coming back."

However, Jones expressed concern for those not included in the information elite. "We must find a way for kids in the inner city to share in the computer revolution," Jones said. "We must not have a segment of society that does not function in this new era." He said the new technology will not make a difference unless there is an attitude and philosophy behind it.

"The information highway should help people tell their own stories and not just make them consumers," he said. "The information highway should help the 'have nots' find their voices, and it should not be used to shut them out. This technology can help bring magic to their own communities."

Jane Alexander, chairman of the National Endowment for the Arts, echoed Jones' ideas about fair and equitable access for all citizens.

"Everybody thinks that will be easy," she said. "But check out the demographics in this room. This is not the face of America. Without access we could divide into subcultures of the elite and the unschooled."

Alexander called for free access sites on the information network that would resemble the libraries, schools and museums of today. "What we advocate is a mixed economy with libraries and bookstores, radio (stations) and music stores, free concerts in the park and concerts at symphony hall," Alexander said.

The NEA chairman said new information technologies can play a major role in public education. "The new technologies are teaching tools," she said, but warned that information without context is meaningless. "Educators, businesses and the arts should team up to ensure that content on the information highway has real meaning," she said.

Alexander warned the computer technologists in the audience not to confuse the new technology with what's real and what's not. "Seeing the Mona Lisa on a compact disc is not the same as seeing the real thing," she said. "Hearing *If I Had A Hammer* on your computer speakers is not the same as hearing Pete Seeger singing it. There is no way to actually create live theater in a box or a game.

"The information highway should help people tell their own stories and not just make them consumers."

— Quincy Jones

"The whole point about virtual reality is that it is virtually real, not really real," Alexander said. "Technology cannot replace the seeing, the hearing and the experiencing of art. It doesn't replicate the doing of art. There's a big difference between a paintbrush and a canvas and a mouse and a screen."

She called for more "divine discontents" whose tools are symbol and metaphor to work with interactive technology. "Content is everything," Alexander said. "As much as we hear about the information superhighway, it doesn't mean a thing unless we have good content running on top of it."

Bell Atlantic Chairman Ray Smith tried to dispel any doubts that an information superhighway is going to be built in the near future. "It will be built quickly," he said. "The underlying economics of it are overwhelming. It's not just the telcos but the satellite companies and the terrestrial and the wireless companies.

"We've tested it, we've seen it and we know the demand is there," said Smith. "The demand for choice and control is banging at our door."

Bell Atlantic, Smith said, has already invested $11 billion in its broadband network over the past five years and has laid two million miles of fiberoptic cable. "Construction is proceeding," he said. "The backbone is already in place."

Smith drew laughs when he used the "field of dreams" analogy to describe Bell Atlantic's new enterprise. "It's not a field of dreams, it's a field of nightmares," Smith quipped. "If we don't build it, THEY will."

Smith predicted an explosion of creative activity in the upcoming months as producers try to create new programming forms for the interactive technology. The network, he said, will "demolish the last proprietary roadblocks that have been stifling digital creativity."

Smith offered a video tour of his company's new "digital factory," the center in Reston, Virginia, where program material will be integrated into the interactive network. He called the digital factory "a new kind of creative unit and a new concoction of engineers and artists."

He urged large and small program creators to take a close look at the new media. "The digital distribution pipeline is on its way," he said, "but that pipeline will remain empty if it doesn't have content."

Sony America CEO Michael Schulhof said Sony will introduce a new five-inch CD format with "motion-picture-quality" video and CD-quality audio in early 1996. He said the new format will hold two hours and 15 minutes of program material. "To me, the digital videodisc will be to video what that Walkman was to recorded audio," Schulhof said.

Magic Link: E-Mail To Go

The second generation of personal communicators provides a multitude of ways to reach out and touch.

by Frank Beacham

For those who like to stay in touch via electronic mail while working on location, a new breed of personal communicator has arrived that may signal retirement for quite a few bulky laptops. Sony's 1.2-pound Magic Link Personal Intelligent Communicator and Motorola's Envoy Personal Wireless Communicator represent the next generation in portable computing. Unlike earlier personal digital assistants (PDAs), these new machines have a specific purpose — communications — and should be of value to cinematographers and other crew members who need to communicate while working in the field.

Both machines are based on General Magic's intuitive Magic Cap platform and Telescript communications language. They both offer a combination of intelligent messaging capabilities that integrate electronic mail, fax, telephone, online services and nationwide paging with personal information software. The Sony specializes in wireline communications while the more expensive Motorola incorporates two-way wireless messaging capabilities.

Both connect to AT&T's new PersonaLink Services network, a commercial service that enables subscribers to perform many routine communications activities with the help of electronic "intelligent assistants." These assistants, or agents, are mobile programs that go to places in the network to carry out their owners' instructions. Software for America Online, the computer service, is also built into ROM on both machines.

By plugging in a phone line to the modular jack and touching an icon on the screen of Sony's Magic Link, a user can easily access electronic mail from either PersonaLink or America Online. PersonaLink users have the option of sending and receiving messages that include text, animation, brief voice recordings, music and electronic handwriting.

Those who want to file memos and other written documents from the field can use the optional keyboard or built-in, on-

screen touch keyboard for text entry or can write a note by hand in "electronic ink." The document can then be faxed or e-mailed within seconds to one or more locations anywhere in the world. Though these devices forgo the troubled handwriting recognition programs of the early PDAs, a new optional software application called Graffiti is available that will translate handwritten documents into text.

The Sony Magic Link includes an integrated 9600 bps fax and 2400 bps data modem. It can also accept an optional pager card that can receive and log wireless messages via the SkyTel network. The Motorola Envoy includes a two-way wire-

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less packet data modem as well as a wireline fax modem. The Envoy's wireless communication is through RadioMail, a message routing service that is connected via the ARDIS nationwide wireless data network. ARDIS serves more than 400 metropolitan areas of the U.S.

The user interface for both machines is extraordinarily easy to master. The Magic Cap software employs a familiar desktop metaphor, using icons such as card files, date books, telephones, notepad, file cabinets and in/out boxes. Once loaded with personal information, these devices pack a lot of communications power and convenience in a very lightweight package.

The debut of Magic Cap and Telescript is, for now, limited to Sony and Motorola's new portable PDAs. Soon, however, both of these software innovations will be available for desktop PC and Macintosh computers as well as a broader line of personal devices.

❧ ❧ ❧

HDTV Comes to the Desktop PC

Challenger to MPEG standard leaves choice of aspect ratio to the user.

by Frank Beacham

A small Manhattan-based company is now demonstrating "HDPC," the ability to display high-definition video on unmodified, off-the-shelf Pentium and Macintosh Power PC personal computers. These computer-displayed images — unlike those in a proposed U.S. HDTV broadcast standard — easily adapt to the original aspect ratio of the film being shown.

The Duck Corporation, founded only two years ago, is also demonstrating what it claims is the first full-motion, 30-frame, quarter- or half-screen video on a standard 486 personal computer running Microsoft Windows and Video for Windows.

The new processes are being done entirely with software and require no special or additional computer hardware. Using a standard 66MHz 486 PC, Duck's software was able to run full screen, 640 x 480 pixel resolution video with 16-bit color at 20 frames a second. At one-quarter screen (320 x 240 pixels), the video was played back at a full 30 frames per second. The full-screen high-definition demo is being shown on a PC using Intel's 66MHz Pentium chip and PCI buses and on the Apple Macintosh Power PC platform.

"Since we use a software algorithm we have a lot more flexibility in how we can deal with the issue of aspect ratio," said Dan Miller, chief technology officer at Duck. "The MPEG chips now being created specify fixed aspect ratio and fixed pixel size. We are not tied into the display processors and hardware the way MPEG is."

Because Duck's system is based wholly in software, a digitized packet of instructions from the filmmaker about aspect ratio and other production parameters can be integrated with the video signal. Such instructions are carried out at the viewer's personal TV or computer display.

For example, viewers with widescreen high-definition displays could see a film in its original aspect ratio while viewers with traditional 4:3 aspect ratio TV sets could have the choice of letterbox or pan-and-scan modes. If pan-and-scan is chosen, the filmmaker's packet of instructions embedded in the digital video transmission could creatively control the process on a scene-by-scene basis or block it entirely.

The demo underscored, however, the subjectivity of what is defined by various segments of the industry as "high-definition" video. A Duck engineer said its HD Pentium demo was displayed on a standard 21-inch computer monitor with a pixel array of 800 x 600 (the number of active pixels per line by the number of active lines). The Grand Alliance, the consortium of companies promoting an HDTV broadcast transmission standard, supports two arrays of pixels: 1280 x 720 and 1920 x 1080.

However, Duck's demo moved beyond traditional HDTV demonstrations by combining high-resolution video with advanced interactivity. "We can co-op any frame in the video instantaneously," said John Gabriel, a senior engineer at Duck, as he moved an array of images around on the screen with a computer mouse. "We can decompress video objects on top of the background on the fly."

Duck's core technology is a new patent-pending compression algorithm for video and audio called TrueMotion "S." Written by Miller and Victor Yurkovsky over a four-year period, the new compression scheme is scalable across major platforms including DOS, Windows (Video for Windows), Macintosh, Sega and 3DO.

TrueMotion S, said Duck officials, surpasses the capabilities of MPEG-2 compression while being cheaper to implement. Its key feature, they said, is a unique intraframe non-DCT (discrete cosine transform) algorithm that offers better quality and editable video with simpler technical implementation.

Miller said the scalability of the TrueMotion algorithm allows it to be used with a wide

variety of resolutions and data rates depending on the horsepower and configuration of the personal computer. He said he expects that the image quality of high-definition video on a desktop PC can equal or surpass that of the Grand Alliance's system with the next generation of Pentium processor and higher-resolution monitors.

"We can equal their [the Grand Alliance's] pixel depth perhaps on the next generation of chip and perhaps, with some further software engineering, on the Pentium 90s coming out this year," Miller said. "We believe we can soon take a standard computer and equal what the Grand Alliance is doing with picture quality."

"We believe we can soon take a standard computer and equal what the Grand Alliance is doing with picture quality."
— Dan Miller, chief technology officer, The Duck Corporation

Duck also demonstrated its Comprending interactive media engine, an interface and package of tools based on TrueMotion S that will allow software developers to pack advanced interactivity into video programming.

For example, the company conducted a demonstration in which video images of products could be turned full circle and examined in close-up detail by viewers through the manipulation of a computer mouse. Such technology could be used for anything from interactive home shopping to "how to"/training applications to video games and entertainment.

Sega of America, the videogame maker, announced plans to incorporate Duck's new technologies into future Sega hardware platforms, including the company's Genesis 32X component. Crystal Dynamics, another gamemaker, has incorporated Duck's compression into some of its interactive game and multimedia titles.

"Comprending is an amalgam of two words: compression and rendering," said Stan Marder, Duck's president. "Instead of thinking in terms of a graphic artist trying to create totally realistic images that can be manipulated, imagine using real images with the end user being able to manipulate them through a computer.

"You can take an entire frame and you can have many objects within that frame made up of live video," he continued. "With Comprending, you can begin to think of the user going into a series of frames to manipulate the video. We believe this is a very important technology for the future of interactivity."

Duck will sell its technology to content developers and platform makers, not directly to end users, Marder said. "We offer the developers the tools. They implement it."

Marder was careful to emphasize that Duck's competition is not the Grand Alliance or television broadcasters, but the MPEG-2 compression technology that is now being considered for the U.S. advanced transmission standard.

"We want to replace MPEG," Marder said. "We have a technology that can be applied today. It can be put into the market right now. It has superior quality, it's intraframe and we can deliver it at much lower cost than MPEG."

Marder said MPEG's interframe compression will limit the interactive capability of advanced television systems and will make MPEG video difficult to edit on desktop video production systems. "We can stop at any frame and manipulate it," he said of Duck's intraframe compression technology.

Cost is also a big factor, Marder said. With TrueMotion S, the video can be decompressed with software only. "TrueMotion does not require consumers to purchase a $400 playback adapter, yet it provides superior image quality," the Duck official said.

Marder said the personal computer is a better way to deliver high-definition video to the home than the more traditional broadcast model being promoted by the Grand Alliance.

"The mindset of the Grand Alliance is television manufacturing," said Marder. "We are showing you this through a computer system. The computer today is an open architecture system that allows interactive HDTV now and can go far beyond that in the future. We've heard nothing from the Grand Alliance about interactivity."

The Duck Corp. expects to present "some pretty serious demonstrations" of HDPC at the 1995 NAB convention in Las Vegas. ☙

Next Month in *AC:*

Movies of the Future

Next month we'll look at research at the MIT Media Lab into new storytelling forms with names like "elastic media," "thinkies," and "multiheaded interactive stories."

We'll examine a brave new digital world where computers can tell stories and "smart" synthetic characters can change their behavior to react to a human audience. We'll also check out a range of new tools designed to help filmmakers shape the new breed of interactive stories. These include prototypes of advanced new software for previsualization, writing, editing and the creation of human interfaces.

Finally, we'll examine the future of cinematography in the age of interactive cinema and focus on some exciting new opportunities with 3-D synthetic imaging. It's all in our upcoming Movies of the Future issue.

Fine-Tuning *Radioland Murders*

Digital effects enhance reality-based comedic gags.

by Ron Magid

The slapstick story of murders occurring during the debut broadcast of a fourth network radio station in 1940s Chicago hardly sounds like the stuff of experimental films, but *Radioland Murders* is exactly that. Against the backdrop of sudsy radio dramas and musical comedy acts on the WBN radio stage, Penny (Mary Stuart Masterson) and Roger (Brian Benben) attempt to work out their troubled marriage as the body count inexplicably rises.

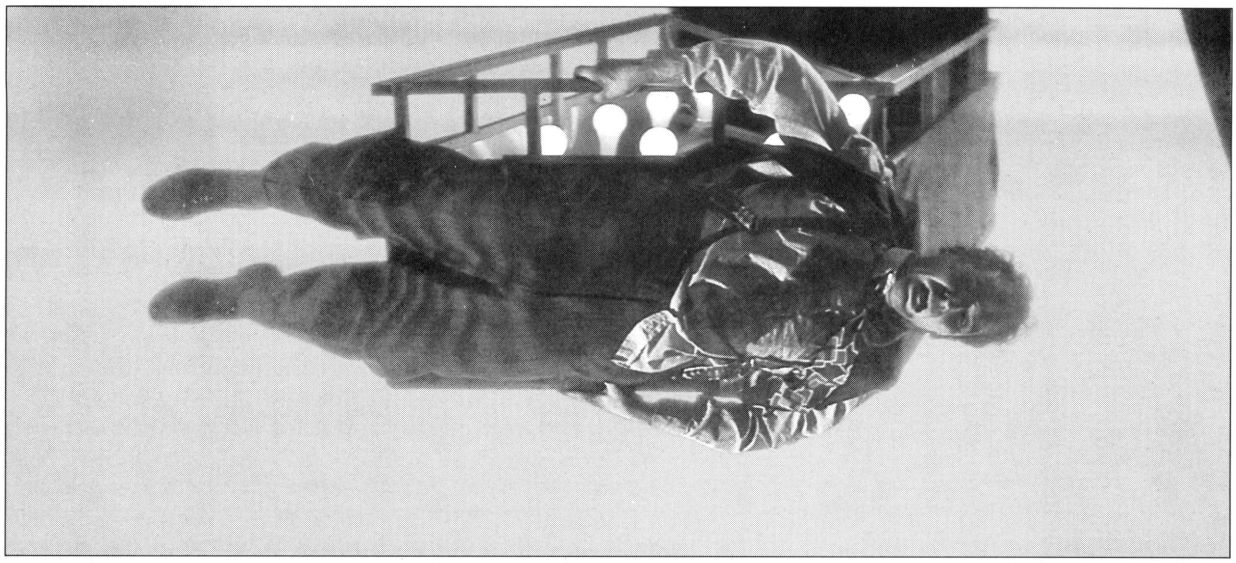
It's a very personal, and unexpected, film for George Lucas, best known for his *Star Wars* and *Indiana Jones* sagas. Lucas dreamed up the story two while working on *American Graffiti* two decades ago (he believes Penny and Roger grew up to become Ron Howard's parents in that film). Lucas always intended to direct *Radioland Murders,* but abandoned the director's chair after the rigors of *Star Wars.* Fifteen years later, he hired Mel Smith to direct, which left Lucas free to supervise the film in the editing room. Suddenly, he realized *Radioland Murders'* true destiny: the simple story would become the testing ground for a grand experiment in digital filmmaking, pioneering techniques that Lucas himself may put to use if he decides to direct the next chapter of the *Star Wars* saga.

Building on five years of the *Young Indiana Jones* television series, where effects were widely used to add scope to the period drama, Lucas and producer Rick McCallum decided on a course of well-orchestrated insanity for the film's production. Any continuity mistakes and other gaffs would be fixed in post using Sabre, Industrial Light & Magic's proprietary real-time compositing system. The result was an attractive, apparently conventional film made entirely in-studio, whose every shot was touched in some way by the computer. The savings were tremendous: Lucas, McCallum and company created *Radioland Murders,* with 100 effects shots averaging about $10,000 apiece, for $10 million total. That's what an independent film costs these days.

Surprisingly, the entire radio station environment, with one notable exception, was constructed on-stage as practical sets with ceilings and no wild walls. "That way, we could shoot any angle, which facilitated shooting quickly," says McCallum, who worked closely with director of photography David Tattersall to make the most of each day's shoot. Their approach included dragging free actors over to an on-stage green screen environment and filming them off-the-cuff for other shots to be created in post. "It required very good planning between our production designer, Gavin Bocquet, and David Tattersall. Using a small crew, David created a very good look while maintaining a ridiculous number of setups per day. There were 40 shooting days in principal, 2100 cuts in the film, and 30 setups a day. We treated our effects shots as just another set-up: we defined the green screen set-work in advance so that Rick could pull an actor out of principal photography onto our green screen set, do the shot using either first or second unit and get them back without a whole lot of hoo-rah. We did many green screen shots a day."

Making their approach more freeing, more frenetic, and certainly more experimental, Tattersall, McCallum, and Visual Effects Producer Tom Squires opted *not* to shoot film for every shot. "We used cropping strategies," Kennedy explains. "We knew if we shot an element on video it would hold up at film resolution if it was only a small part of the frame. So when we extended the radio station audience for certain shots, you'll find part of the audience was shot Hi8. We also shot three-quarter-inch video for some of the elements. David Tattersall used a mix of Kodak 5248 and 5296 35mm stock for the principal photography — whatever tool would work. Many of the composites in this movie mix film- and video-originated plates and elements with other elements that were shot as still pictures."

"Will it work and can we get away with it?" seems to have been the motto of the *Radioland Murders* production, which gleefully created new effects challenges daily, although not all of them were planned. "Well, we had some handed to us too!" Kennedy grins. "Fortunately, Rick had brought in some top-notch people, like production designer Gavin Bocquet and Peter Russell, who both were very familiar with effects. Our head matte painter, Yusei Uesugi, who did many of *Young Indy's* matte shots, was responsible for an awful lot of clever strategies in *Radioland's* big effects. He helped Rick pull together a tremendous amount of production value. Our job was extending the producer's capabilities by putting more on the screen for the budget we were



To simulate rooftop hijinks, actor Brian Benben was suspended in front of green screen and then composited into the nighttime "location."

Photos courtesy of Industrial Light & Magic

given. Part of my role as visual effects producer was to determine if we could do something cheaper with effects than we could on-set. As long as we make it transparent, who cares which way it was done? The effects are strictly there to extend a set or underscore a dramatic moment. This is not an effects film by any stretch."

As principal photography sped along, ILM's fix-it effects quickly became an extension of Lucas' postproduction process. The ongoing experiment was kept on track by Tom Kennedy, who was an effects editor on high-tech visual presentations for clients like Apple before coming to ILM. Kennedy's editorial background enabled him to visualize how those myriad pieces of film and video were going to come together even as Lucas imposed another experimental restriction on the process. "George wanted us to really work to save film," Kennedy says. "The dailies were all on video. We went from camera negative to Beta SP transfer at Rank in London. George edited the whole show on the Avid without any workprint."

Thanks to telephone and fiber-optic technology, the editbay was in constant contact with the visual effects team at ILM. It was never intended for visual effects supervisor Scott Squires to see the effects through the entire postproduction process. "Scott supervised the portion of our 100 effects shots that were originally planned as extensions and required miniatures or other traditional visual effects, then handed off those sequences to the rest of us to finish," Kennedy says. "But as the film went through editorial, new shots came up, so the work grew despite our tight budget. This show used the effects team as an extension of the edit room. George and the editor, Paul Trejo, would look at shots to see how they could be made better. Our approach was to digitize elements only as needed, so we were very selective about which elements got scanned at ILM. We were able to do fast test comps and send them over a fiber di-

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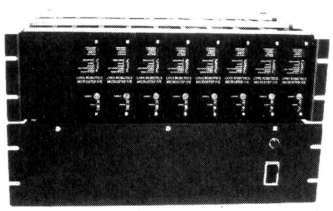

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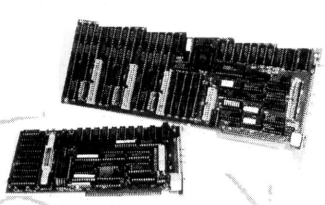

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rectly to the editing room, where George could look at them quickly. Then we sent the finished composites off our Sabre system for their review, which shortened the time for us to get an effect back to the edit-bay."

But reviewing digital matte paintings for a feature film on a computer screen is problematic. Traditionally, effects shots are projected on film to ensure that they work in the large format of a movie theater. "Actually, part of the trick here was to see how much we could avoid doing that," Kennedy says. "Our compositing system has a standard 19-inch screen, not all that large, so we ended up putting our noses to the screen a lot." This led to at least one unexpected fix-it shot: "We had Michael Lerner coming out of a car and there was a scratch on the negative. We didn't want to have to go back and reshoot, so we fixed it because it was cheaper than going back into production. That was classic filming in a hurry, not getting film dailies."

Some mundane, but vital, fixes included flopping a shot where an actor entered through the wrong door, extending the audience in front of performers, adding a policeman on either side of a stairwell as an actress runs off and multiplying the number of generators charging up the radio station. "Those are what we call 'enhancements,'" Kennedy states. "We did approximately 30 shots where we composited found elements or added a muzzle flash to a gun because the armorer was not on set that day, etcetera. A good portion of the work involved just putting more punch into a shot or putting two elements together to address continuity problems that came up. For example, we needed a wide shot of the stage with microphones, but the wide shot we had wasn't intended for that purpose and didn't have microphones, so we painted microphones in. We had two shots of Corbin Bernsen in the control booth, where for continuity reasons, we had to place digital venetian blinds over the windows. All the time, we were experimenting and watching to see the learning curve as we addressed multiple shots using some of these same techniques."

Much of ILM's work involved stretching the *Radioland* budget by duplicating extras (when you consider the period wardrobe involved, that alone saved a bundle), creating exteriors via matte paintings, and utilizing miniatures. "The sets were built to the size they would appear in the film, with the exception of the lobby," Kennedy relates. "The lobby consisted of just the streetside wall, but we extended the wall's height and added green windows over each of the three doors that the show-audience filed through. The scene was shot static but we reduced the live-action element and added a slight push-in. Since there were only two scenes in the lobby, these shots established the scope of the radio station and saved the production $20,000."

In the editing bay, Lucas was returning to the frugal days of his independent first feature, *THX-1138*. *Radioland Murders* was about using special effects techniques not to dazzle, but to make shots cheaper to achieve — an almost-forgotten concept in the wake of big-budget effects films like *Terminator 2* and *Jurassic Park*, on which ILM also worked. But films like *Forrest Gump* and *Radioland Murders* are changing the role of effects, leading inexorably to a time where they will cost less than other filmmaking techniques. Soon *Radioland Murders'* fix-it shots and digital set extensions and enhancements will be so commonplace we will not regard them as special effects. In the spirit of that future reality, only three sequences can be said to truly utilize effects: the opening and closing shots of the film; a slapstick, Harold Lloyd-esque stunt on the WBN sign; and the climax atop the radio station's

tower.

But let it not be said that those few effects sequences lack ambition: the opening shot of the film — which begins on the Universal logo, passes through a starfield, then drops down to reveal the WBN radio station — lasts a full minute and involved a matte painting, a large-scale miniature and a live-action plate. "That shot was tough because it was lengthy," Kennedy recalls. "It's not as long as the Gump feather shot, but on our budget and timetable it was pretty challenging. As the Universal logo wiped off, we match-dissolved through to our replication and extension of the Universal starfield, which was a matte painting that the 'camera' then began to move on. Over that, we composited a shot panning down to the spire of our forced-perspective model of the radio station, which becomes a *Star Wars* homage as the point of the radio tower breaks frame like the first shot of the Star Destroyer. The division between the massive-looking miniature and the live-action plate of crowds waiting to get into the station is the underside of the portico over the front entrance."

Though the plate was not shot with motion control, the radio station miniature was. The dynamic move on the WBN building model, reminiscent of the Capitol Records building combined with a 1939 World's Fair look, was achieved by a daring mix of scale: the tower at the top of the building was 1/8 scale while the portico was 1/24 scale. "It's something we wouldn't normally see in the physical world," Kennedy concedes, "but in designing the shot, we had the freedom to build a foamcore model of the building, then do some test animatics working with a computer graphics artist until we achieved the right look. The production designer, Gavin Bocquet, had actually rendered some of the animatic in CG as part of the design process. The scale shift in

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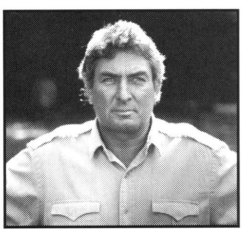
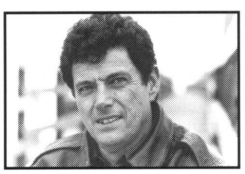


LIGHTING *DANCES WITH WOLVES* with **Dean Semler.**



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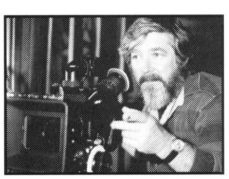

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the finished shot makes for a very dynamic move; the viewer's not aware we mixed scale because the camera angle's so extreme."

Naturally, Lucas insisted that his effects cinematographers move as fast on the motion-control stage as David Tattersall did on the live-action shoot, which raised a few eyebrows at ILM. The miniature photography passed the test with flying colors. "That shot involved a motion-control pass and a separate pass for lighting," Kennedy says, "but we didn't have to be as concerned about lighting the beauty passes because we knew that we could digitally correct any problems in post. There was very close collaboration between our Sabre operator, our motion-control cameraman, and Scott Squires."

The closing shot was a replication of the opening sequence in reverse, as the camera rises along the WBN building, rotating up and away to the stars, using the same model. The live-action plate, however, gave ILM some trouble. "We hadn't quite planned to use this plate for the final shot, so we had to add things to cover that up," Kennedy admits. "All of the additional elements were shot on video — the crowd and the car were real, while the trucks were models that Yusei Uesugi shot as still frames, to which he added a parallax shift. We panned up from the model and out to the starfield."

Aside from the opening and closing shots and the climax, the only time *Radioland's* action takes us outside the station is when Roger goes out on a ledge and ends up swinging on the call-letters. Although the entire idea for that sequence was conceived by Mel Smith two weeks before principal photography began, ILM created the sequence using quick shooting techniques without missing a beat. "The stunt sequence was one of the more visually expansive parts of the film," Kennedy opines, "and was challenging to pull off for our budget. We used a mix of techniques. The wide shot of the stuntman on the letters went to the limit of our actual set, which was three stories tall with a bit of the wall extending past either side of the call-letters. The letters were on the set and replicated on our model. The first-unit crew shot Brian Benben in a clasp against green screen, and we placed him onto the model. The longest shots showing Roger swinging on the letters used a puppet. The police shooting at him were shot against green screen. We also added the stars in the background. We did one plate shoot of the street below and matted shots from it into our shots, so some of the spotlights were real, but we extended the street and buildings using a matte painting. Essentially, the rest of Chicago was done with matte paintings."

The climactic confrontation between Roger and the villain of the piece took place on the radio tower spire atop the WBN building as an airplane buzzed overhead. The sequence blended aerial helicopter footage of the tower (which was actually sitting on the ground), the WBN building miniature and real and computer-generated airplanes. "That was really challenging," Kennedy says. "The high-angle shot of Roger and the villain first coming out onto the roof was taken from a helicopter over the set of the radio tower and roundhouse in Wilmington. Tattersall also shot handheld footage of the actors climbing up the tower set at night. We did a match-move and rotoscoped the edges of the tower in order to add the streets below. We then added interactive light from the red beacon at the top of the tower. We also radically changed the lighting at the top of the tower for continuity — it was really bright and didn't cut with our downview, so we selectively darkened parts of the shot. We next added the whole city shifting perspective behind them. The city was a static photograph that

we match-moved into the shot.

"Lastly, we added a computer graphics bi-plane that intercut with the real airplane," Kennedy explains. "We chose that route because we could control and choreograph the shot more precisely using a CG airplane. As our CG bi-plane flew toward the radio tower, which was also CG, we wobbled the plane and added a parallax shift to our plate of the city. Even the propeller turning on the real plane was CG."

Kennedy doesn't see *Radioland Murders'* fix-it effects as the natural successor to the *Young Indiana Jones* series or *Forrest Gump*. Instead, Kennedy believes this type of work was always part of Lucas' scheme for ILM: "I think it evolved from the get-go. The roots of the company are in doing effects that people don't initially perceive as effects."

ILM is moving closer and closer towards becoming a digital studio, where films like *Radioland Murders* can be made effectively in the editing and special effects bays. "What's little known about all this is how much George Lucas' personality is behind this revolution," reveals director Matthew Robbins (*Dragonslayer, Batteries Not Included*), a longtime friend. Robbins feels Lucas' ultimate goal is to transform ILM into a digital backlot and, like one of the original moguls, make films entirely within the studio. "George has always been a filmmaker who is most at home in postproduction. And all the tools that he has forged through this company have been designed to allow him to be in that cutting room with more bells, whistles and toys to utilize his imagination. It is that desire that has pressed ILM to come up with so many of these techniques.

"The digital tools manipulating these shots are not that big a step away from what we would call conventional filmmaking," Robbins adds, "so it seems to me that ILM is actually

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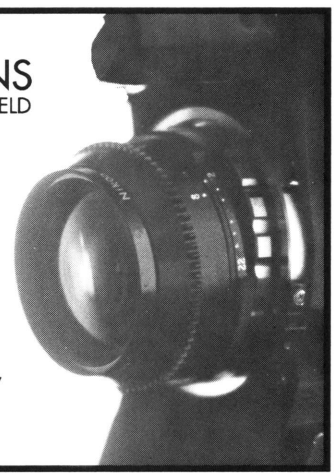

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The Fries model 435 is a new general purpose MOS production 35mm camera. With its optical printer compatible register pins, steadiness and 150 FPS speed. The 435 is ideally suited for special effects, commercials or any photography where a quality steady image is desired.

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There are both 1000 ft. and 400 ft. displacement type magazines. A new feature is the light valve which allows the operator to direct all the light to the viewing system, or to the video assist, or combo which splits the light between both viewing and video assist.

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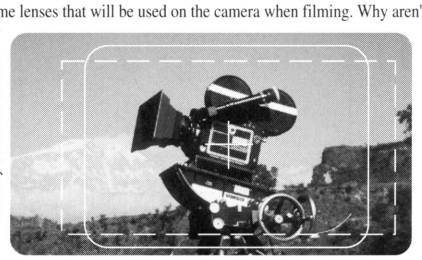

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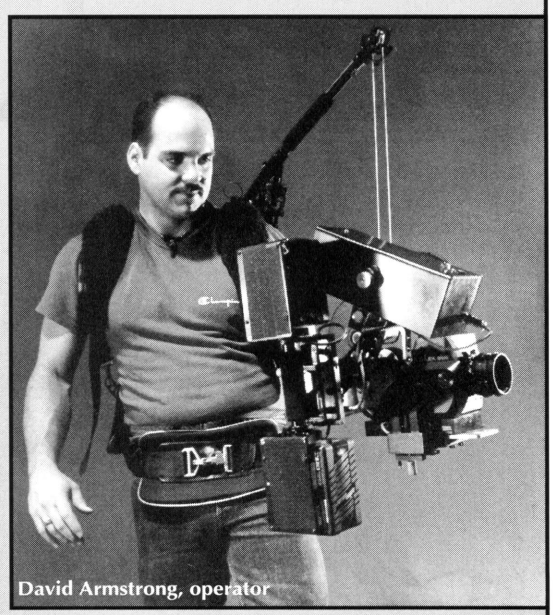

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U.S. Patent No. 4,206,983

leading a revolution in terms of how people look at special effects and filmmaking in general. There are huge implications for everybody. ILM is not an arcane world where you go just to create a dragon, it's a world where you go if you don't have enough money to make a set the size of a football field. The price is coming down all the time, so the whole landscape for directors is really changing."

Lucas' tenacity promises to bring filmmaking back down to the personal vision of directors, allowing them to make movies their way — first in production, then in an editing space. "I find it a double-edged sword," Robbins says candidly. "George loves the idea of coming to work in the morning and going into a big blue box with a couple of actors and a couple of hand props, then put everything else in later. I understand the attraction if you like working that way, and sometimes I do, but I don't entirely agree that having all this stuff available later is the ultimate liberation of imagination. Filmmaking is not going to disappear; we're still going to make films like we used to, but things have certainly changed."

If the great experiment of *Radioland Murders* pays off, filmmakers may at last be free to shoot from the hip, capture the drama, and fix any problems in post.

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Filming 27 Stories Up

by Mary Hardesty

Shooting interiors using natural light can be risky, but add to that two cameras, images projected onto glass and painted surfaces, 20 computer monitors, two dozen actors and a location on the 27th floor of an unoccupied office building in Los Angeles' busy mid-Wilshire district, and you have the latest commercial assignment of director of photography Curtis Clark, ASC.

"When you're shooting high up in a big building it's great if you can make use of the natural light, because it's usually *after* the scouting and location selection takes place that the reality of pulling cable up 27 stories sinks in," observes Clark, whose credits include spots for AT&T, DuPont and Ocean Spray. "Because we were so high up, to correctly light the scene any other way and duplicate our results we would have needed helicopters with lights hovering outside the windows acting like levitating Musco Lights."

Time and money restrictions meant that the use of a stage set was not an option for Clark's latest spot, a :30 MCI ad featuring frenetic stockbrokers wheeling and dealing in what appears to be a Wall Street trading room. The spot, "Financial Broker," which called for a cool and steely look, lent itself perfectly to the use of a natural light source. "I was able to use the warmth of the natural light source to get natural-looking flesh tones and let the rest of the scene go cooler," says Clark.

Clark augmented the natural light with bounce cards and a variety of reflectors, including silver and white Griffolyns and mirrors. "I took advantage of the quality of the color of the sun as it changed," says Clark, whose trick was to use a series of 81s. "That way, if I needed to make the scene a bit warmer because the natural light was getting cooler, I could do so in very small Kelvin shifts by taking temperature readings and making a judgment call."

Clark used the GPS Satellite navigation system to accurately time sunrises and sunsets. "It was very valuable in terms of establishing a schedule and deciding on a call time, because it shows you the path of the sun for your particular location. Also, it enabled us to determine exactly the earliest time we could start shooting and at what time the sun would have a direct path between the buildings across the street and into our office block. You couldn't do something like this without one."

In addition to lighting the actors, Clark had to worry about synchronizing the computer monitors' video screen roll with the camera as well as lighting several projected images. "A multi-layered front and back projection situation is no easy trick to set up or light," Clark says.

Before the six-day shoot, Clark took black & white portrait shots of several of the key actors in expressive poses. He used classic portraiture techniques — single-source lighting against a black background — and shot with 5222 Kodak stock. These images were then projected onto walls and glass partitions that were designed and installed in the office space.

"One of the projection screens was just outside camera range and the glass partition picked up the reflections, so we had multiple layers of the actual actor, his projected image and the projected image being reflected in the partitions," explains Clark. He shot these images at 120 frames per second so that when the image would be projected normally, the frenzy is slowed down to allow for a good glimpse of the trading-floor intensity. "We had some additional projected images, including a few stock shots, as well as color slides we shot of beaches, traffic, and New York Wall Street scenes. We deliberately degraded these images to create impressionistic forms that you never can quite make out.

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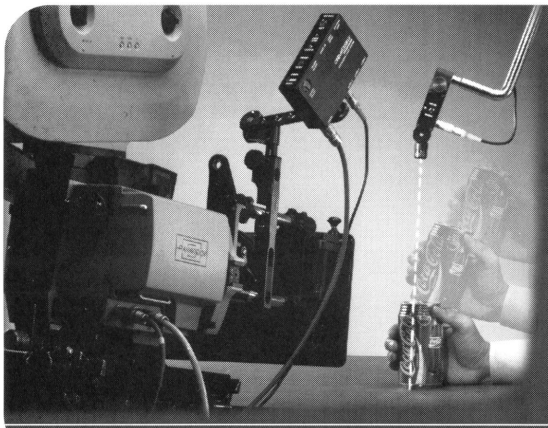

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For some shots we did a long-lens pull through the projected image on the glass to the primary action in soft focus in the background," says Clark. The equipment package included a Panastar camera and Primo's 11:1 and 3:1 zooms in conjunction with Primo close-focusing 27mm, 35mm, and 50mm primes.

Clark incorporated a handheld element, using an Aaton 35mm Mark II camera to capture close-up elements of faces and monitors. "We basically just kept shooting the same scene in different ways, using different cameras and lenses," says Clark, who used Aaton's 35 Mark I model number 001 in the 1989 feature *Triumph of the Spirit.*

For some takes, Clark deployed Lightning Strikes units. "We did the scene with no lighting except computer monitors and intermittent lightning flashes to freeze moments and then plunge them into blackness, to create an impressionistic collage look," says Clark.

Clark did have one pre-lighting day, but this was primarily to decide on specifics for a second MCI spot that was being filmed on the ground floor of the building.

"By shooting two spots simultaneously, we had our cake and ate it, too," offers Clark. "Because we shot the upstairs first, the cable concentration and lighting was done downstairs when we got there, so I didn't have to do a big cable run for that first day's shooting. That bought the time to do the cable run up to the 27th floor by the time we needed it. It was actually a very efficient way to shoot." The crew also built a small platform for the 12K lights on the ground floor, which backed up to a slope.

"It all comes down to logistics. You need to always keep in mind the time needed to do cable runs to get cameras and lights into positions you want. If you're going all the way to the 27th floor, that time can be considerable."

Spot: MCI's "Financial Broker"
Director of photography: Curtis Clark, ASC
Director: Rocky Morton
Production company: Morton Jenkel Zander (Los Angeles)
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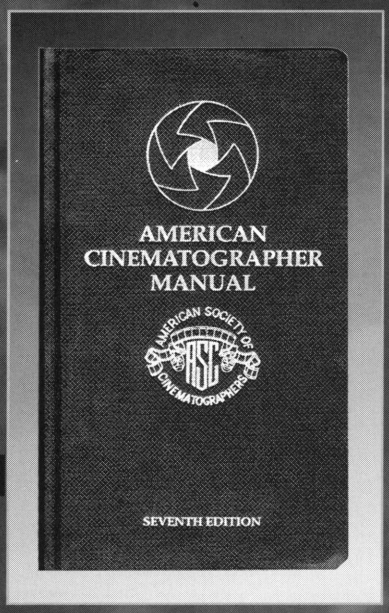

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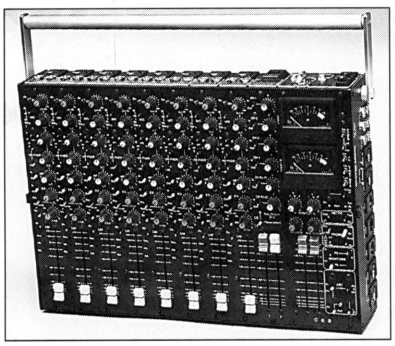


Location Audio Mixer

Cooper Sound Systems CS108 +1 Audio Mixer is an extended-chassis version of the Cooper location mixer that features a comprehensive communications system and may be ordered with six to nine modular input channels. Input channel options include mono or stereo modules with M/S decoders and the new Aux. Module CSD-2. All modules are plug-in, so the mixer may be easily reconfigured should the application change.

The Aux. Module CSD-2 converts the Cooper Audio Mixers into true 6/8 X 4 + aux mixers. Installed in the seventh or ninth channel slot, CSD-2 provides two extra independent balanced outputs that can be utilized for four-track recording, two stereo mixes or additional aux. sends. Any of the input channels may be selected and panned to these outputs.

Also new is the Cooper ENG-style four-channel mixer, designed to be operated as an over-the-shoulder style unit with all the controls accessible from the front and side panels. It features switchable analog meters, Jensen transformer coupled inputs and outputs, optional insert points and channel outs, PFL, and four mono input channels with the option to link Channels 1 and 2 and Channels 3 and 4 as stereo inputs. The mixer's overall size is approximately 10 X 6 X 2.25 inches and it offers both internal and external powering options.

For information: Cooper Sound Systems, 31952 Paseo de Tania, San Juan Capistrano, CA 92675.

Digital Nonlinear Editing System Updated

Version 5.06 of Editing Machines Corporation's digital nonlinear online editing system, the EMC Primetime OnLine, offers high-quality titling with The Titler, which supports TrueType fonts used in Windows and Macintosh applications. Titles are anti-aliased in more than 16 million colors with fully transparent drop shadows. The Titler software was developed as a collaborative effort between EMC and fellow Dynatech company ColorGraphics.

The wide array of video effects possible with the OnLine system has been extended to include 3-D, page turn and fisheye effects. The OnLine system's interaction with multimedia files has been enhanced by its ability to read and write industry-standard multimedia file types.

For information: Editing Machines Corporation, 5125 MacArthur Blvd., NW, Washington, DC, 20016, (202) 362-3102, FAX (202) 362-3240.

QuickTime 2.0

Apple's QuickTime 2.0 for Windows offers developers a cross-platform standard for creating, using and sharing multimedia content between Apple Macintosh and Windows-based personal computers. In addition, it offers Windows-based PC consumers higher-quality video and other multimedia features not currently possible with other Windows-based multimedia software. Using QuickTime, developers can create multimedia titles once and deliver them to many platforms including Macintosh, Windows, interactive television and Fujitsu's FM Towns.

The program includes support for full-motion, full-screen video and supports MPEG, a standard that allows for smoother, higher-quality video. Unlike the postage-stamp-sized video of years past, QuickTime 2.0 for Windows now makes it possible for users to play full-motion video even on entry-level personal computers. For example, it's now possible to play video at 30 frames per second on a 25 MHz 486 computer with just 4 MB RAM.

QuickTime 2.0 for Windows integrates and synchronizes photographs, music, computer animation, musical scores, CD-quality audio, text, and digital video. It has new music capabilities that make it easier to include music with CD-ROM titles and presentations, without requiring a technical understanding of MIDI technology. Using the capabilities of MIDI and sound add-on cards, QuickTime synchronizes MIDI-generated music with video and digital audio. QuickTime 2.0 for Windows also features audio compression, which brings CD-quality audio into multimedia presentations while using a quarter of the space required by uncompressed audio.

It is also easier to incorporate and use words within reference titles and interactive books using QuickTime 2.0 for Windows, due to support for searchable, anti-aliased text.

For information: Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, (408) 996-1010.

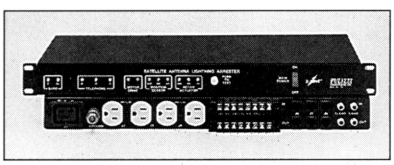
Digital Audio Workstations

Sonic Solutions has introduced an expanded line of digital audio workstations, including a new digital signal circuit card, the UltraSonic Processor (USP), which provides up to 16 channels of digital I/O, up to 32 tracks of disk playback, and 32 filter sections. The USP offers a 16-channel system per card; a full 24-channel system with eight aux sends can be configured with only two cards, leaving one slot available in the Power Macintosh for a video card or other plug-in hardware. Multiple USPs can be included together to configure larger audio systems; the largest configuration per-

mits 96 channels of input/output and 192 tracks of playback from disks.

The company's three new entry-level systems, the Sonic Power Station, the Sonic Radio Station, and the Power Station Plus, are based on the SSP-3 DSP card. The Power Station provides two channels of digital I/O, playback of up to eight channels from a single hard disk, and background loading to the hard disk. The Sonic Radio Station adds the features of Time Twist and 48 to 44.1 kHz sample rate conversion. The Sonic Power Station Plus offers four channels of digital I/O, playback of 12 channels from a disk, and background unloading as well as loading to the hard disk. It also includes a Mixing Desk with EQ and Automation, TimeTwist (Sonic's time compression and expansion algorithm), as well as 48 to 44.1 kHz sample rate conversion. The Sonic Power Stations platforms can be networked via MediaNet to existing Sonic systems and new Sonic systems based on the UltraSonic Processor Card.

For information: Sonic Solutions, 1891 East Francisco Blvd., San Rafael, CA 94901, (415) 485-4800, FAX (415) 485-4877.



Surge Arrester System

Pulizzi Engineering's Model LA 1653 Satellite Antenna Lightning Arrester System is designed to protect all circuit functions, including motor drives and sensors that link a satellite tracking station with a remote receiver. The system can withstand spikes and surges as extreme as lightning strikes on AC power, RF and telephone lines. The Model LA 1653 also provides EMI/RFI suppression on low-frequency circuits.

In case of severe electrical storms or other high-voltage fluctuations, a built-in test function is included which indicates that all circuits are functioning properly. The unit is packaged in a convenient, easy-to-install 19" rack-mountable steel enclosure, and measures 1.75" high by 6" deep. NEMA receptacles are used for AC lines, RJ45 for phone and data lines, terminals for motor drive and sensor circuits, as well as F-type connec-

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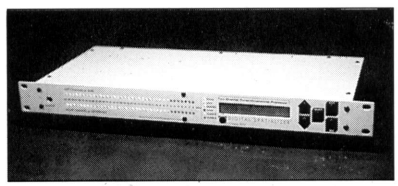


Audio Processor

Spatializer Audio Laboratories has released its Spatializer 3-D audio processing technology in digital format. The Digital Spatializer is a real-time two-channel processor that provides precise control of expanded stereo imaging and realistic stereo synthesis from mono sources. The Digital Spatializer was developed in cooperation with dB Technologies for use in CD mastering facilities and for localization of individual sounds in the stereo sound stage.

Digital Spatializer technology follows the recent introduction of the company's multi-track, joystick-controlled Pro Spatializer 3-D audio production system. The technology features software-driven parameters, reference quality metering, and 24-bit processing. Digital Spatializer interfaces with digital consoles, tape machines, and converters. Finished products are in Spatialized 3-D surround sound, are mono-compatible, and require no decoding or additional power in broadcast or playback applications.

For information: Spatializer Audio Laboratories, 11400 W. Olympic Blvd., 11th Floor, Los Angeles, CA 90064, (310) 268-2700, FAX (310) 444-4970.

Video Recorder

Electronic Digital Innovations' EDI-Assist is a random-access video recorder developed for film and television video assist applications, providing the benefits of nonlinear picture technology in video split-shooting situations. The unit features instant location of picture and sound; switching between playback and live action to match frames; the ability to play back a take immediately after recording; chromakey facility to check color separation and background position; variable recording and playback frame rates; single-frame recording for animation and pixillation preview; PAL or NTSC operation in the same package; time-base processing of audio tracks for sync playback at any frame rate; and easy-to-operate Windows-based software.

EDI-Assist accepts a composite PAL or NTSC video signal from a film camera video split or directly from a video camera. Mono or stereo sound from the recordist's equipment can also be recorded. Video and sound are digitized or recorded using standard JPEG hardware. Pictures are displayed on a high-quality VGA computer monitor and composite video monitors. No special computer or video knowledge is required for operation. The system is controlled by a mouse and keyboard using simple Windows point and click commands. EDI-Assist hardware and storage time can be configured for any application, from a half-day shoot to a three-month feature.

For information: Electronic Digital Innovations, 169 Bank St., South Melbourne, Australia 3205.

Grip Vest

Paktek's Tool Pak-brand Tool Vest has 20 front pockets for organizing tools, a zippered front, six flap-covered pockets, one large rear pocket accessible from both sides, four expandable side release buckles, a nylon mesh back, and bright red panels for visibility.

For information: Paktek, 7307 82nd St. CT SW, Tacoma, WA 98498, (206) 584-4914, FAX (206) 589-1091.

Motion Capture System

Polhemus' UltraTrak motion capture system provides real-time data from a virtually unlimited number of sensors. Combined with the Long Ranger transmitter, UltraTrak provides a working area of more than 908 square feet. The system comes in a single chassis with an integral 486 computer to act as a server. Data is transmitted to a Silicon Graphics workstation over an Ethernet interface. UltraTrak uses patented low-frequency magnetic transducing technology, so there's no need to worry about maintaining a clear line of sight between the receiver and transmitter. Polhemus has eliminated the problems of signal blocking and interference that distort other devices.

For information: Polhemus, One Hercules Drive, P.O. Box 560, Colchester, VT 05446, (802) 655-3159, FAX (802) 655-1439.

Lens Adapter

Wexler Video is now offering a lens adapter developed by DAL Research Corp. that enables the broadcast video professional to mount a B3 2/3" Ikegami-type lens to a B4 2/3" Sony type camera. The adapter works on all ENG, EFP and studio cameras, requires no tools to install, compensates for iris and CTR trigger voltages as well as back focus and chromatic distortion, allows no light loss, does not change the focal length of the original lens and comes in broadcast and industrial versions.

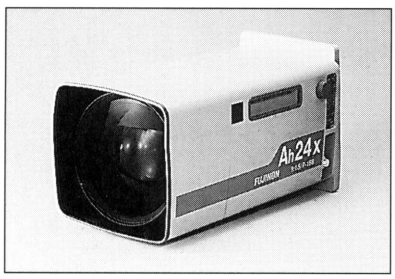
For information: Wexler Video, (818) 846-9381, (800) 800-9383,

Multimedia Desks

The Winsted Corporation has introduced a new line of digital desks for multimedia editing and production. Appropriate for both linear and nonlinear systems, these multifunction workstations are ergonomically designed to curve around the user. Five models are offered, with two desktop heights of 27 1/2" and 29" and adjustable monitor shelves. All units are designed to integrate easily with all multimedia systems. Models range from a compact 48" wide workstation up to a 94" workspace desk. All models feature black granite laminate work surfaces and riser shelves, wire

management system, and optional decorative trim accent inserts.

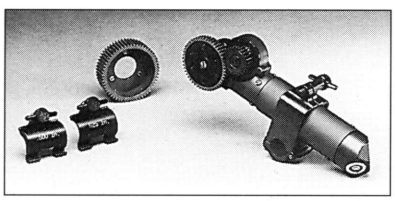
For information: The Winsted Corporation, 10901 Hampshire Ave. South, Minneapolis, MN 55438, (612) 944-9050.



Studio Production Lens

The Fujinon Ah24X7ESM 2/3-inch studio production lens incorporates Fujinon's proprietary floating group lens assembly for controlling coma and field curvature. The lens has reduced chromatic aberration, improved focus tracking and corner resolution and increased brightness. Fujinon's Electron Beam Coatings are incorporated in the lens to reduce ghosting and flare. Focal length is 7 to 168mm, maximum aperture is f1.5 to 126mm and f2.0 at 168mm, and MOD is 0.6m. The lens weighs 18.1 kg and measures 228 X 231 X 530mm.

For information: Fujinon, Inc., 10 High Point Drive, Wayne, NJ 07470, (201) 633-5600, FAX (201) 533-5216.



Lens Drive Motor

The SLD-100P servo lens drive motor can be used with all film and video camera lenses and is based on a radial motor orientation that is easy to set up, requires no extra bracketry and permits use of two motors for simultaneous control of iris and focus. The unit's feedback pot is directly driven by the output gear, which is in immediate contact with the lens gear, a configuration which eliminates backlash associated with motors whose feedback pot is several stages removed from the lens and which can produce inaccurate lens setting readings.

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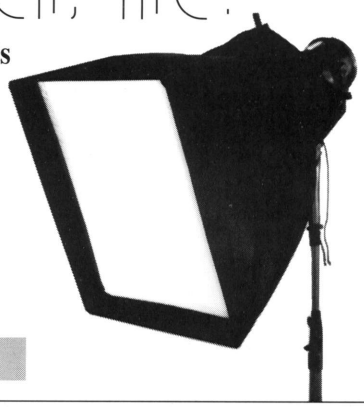

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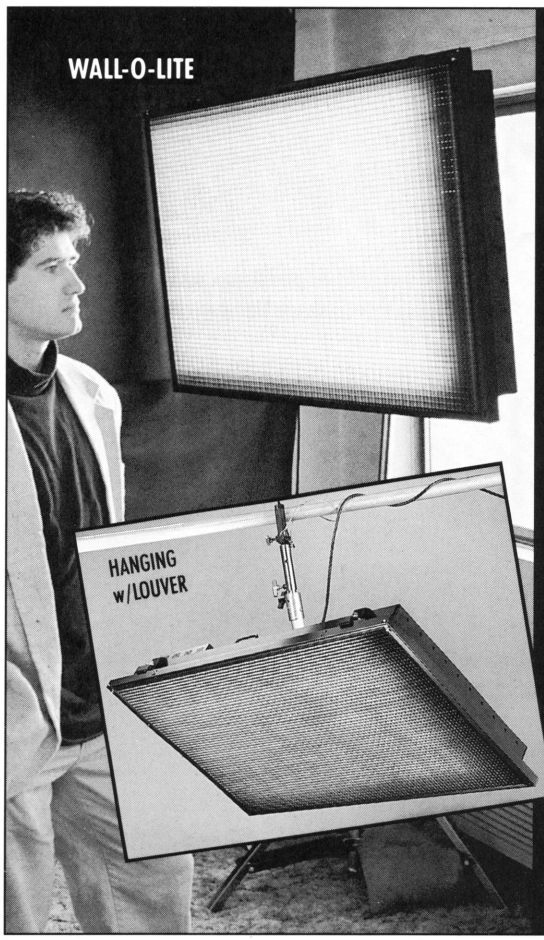

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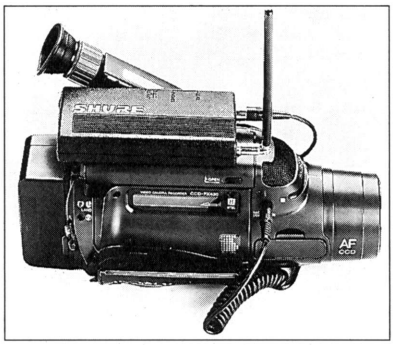
sary gears and bracketry for almost any camera/lens combination. The compact motor body serves as the adjustable vertical member of the mounting bracketry, and a set of piggyback gears makes it suitable for any lens, including physically short lenses located too close to the camera front for conventional motors. A standard 32-pitch drive gear and metric .5, .6 and .8 module gears are supplied to meet most lens drive needs. No tools are required. Clamp brackets for all standard matte rod sizes are also provided. The brackets separate for easy mounting behind a matte box or follow focus.

For information: Cinema Products, 3211 South La Cienega Blvd., Los Angeles, CA 90016-3112, (310) 836-7991, (800) 955-5025.



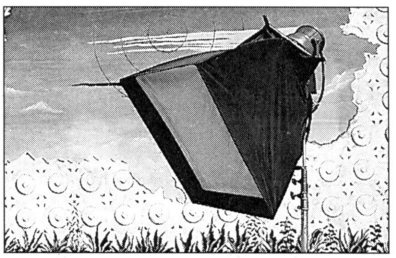
Wireless Audio Systems

The VP Wireless Systems from Shure Brothers are designed to deliver high-performance sound quality for applications requiring the mobility of a portable wireless receiver. Composed of three different battery-operated receiver/transmitter combinations, the product line is outfitted with mirror imaging audio processing, separate squelch and monitor adjustments, a balanced microphone level output, and a headphone jack.

The VP3 portable receiver is powered by a single 9V battery which delivers a full seven hours of operation. The receiver weighs eight ounces and measures 5" X 2 1/3". Its single pivoting "rubber duck" antenna can be set in either a horizontal or vertical position in order to optimize reception.

VP Wireless Systems can be utilized with three different Shure transmitters: a T2/58 handheld microphone transmitter featuring an SM58 capsule; a T1P body-pack transmitter with an attached WI93 micro-miniature lavalier microphone; or an L11 body-pack transmitter, which can be used with a wide variety of Shure wireless lavalier and instrument microphones, as well as electric instrument inputs.

For information: Shure, 222 Hartrey Ave., Evanston, IL 60202-3696, (708) 866-2200, FAX (708) 866-2279.



Light Ring and Soft Box

HK Tecknika has updated their Universal Lite-Ring and Teck-Tent. The Lite-Ring has been modified to a thinner profile, but is still capable of adjusting to fit more than 30 lighting fixtures. The design makes it possible to change lighting sources faster and with less fuss, and adjustable handles make it easy to place the Teck-Tent soft box on any light that has barndoor holder 6" to 12" in diameter. The Lite-Ring also has a 5/8" female housing, which enables the user to attach the unit to a century stand arm or to hand the ring and light fixture together.

The Teck-Tent soft box has interchangeable front panels which are available in grid cloth, silk and muslin. The front panels are easily removed and securely held in place with hook and loop fastener.

For information: HK Tecknika, 629 Roundtree, Mesquite, TX 75150, (214) 279-7200.

High-Resolution Lenses

Schneider Corporation of America's five high-resolution (visible through near IR), super-corrected lenses, in manual focusing and aperture configuration, are extremely compact, measuring just 31.5mm in diameter, and are corrected over the broad spectrum from 400 to 1040 nanometers. Users have also reported outstanding results in the 1 to 2 micron range with resolution up to 30 line pairs/millimeter. The degree of correction matches the spectral sensitivity of charge coupled devices (CCDs) of today's most specialized video systems. In practical terms, the added correction provides the equivalent of about 1.5 f/stops in light-gathering power to en-

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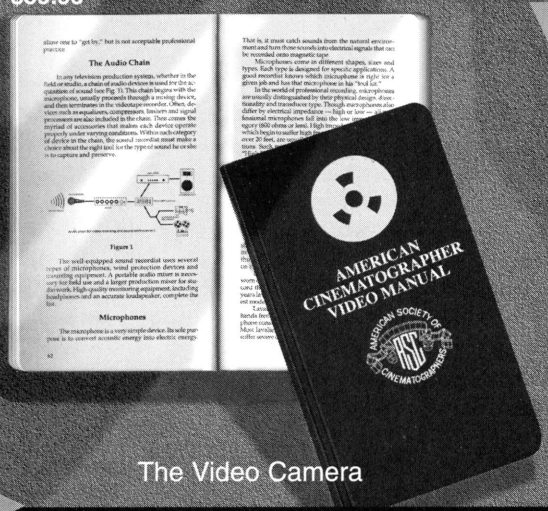

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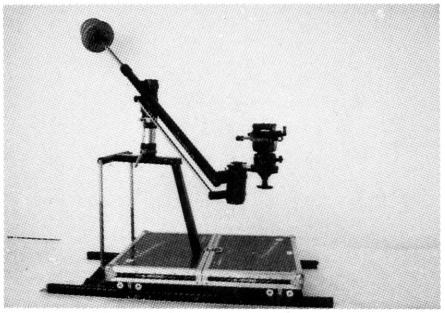

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For information: Schneider Corporation, 400 Crossways Park Drive, Woodbury, NY 11797, (516) 496-8500, FAX (516) 496-8524.

Photography Software

Douglas Software's DataGuide program for IBM -compatible PCs (version 2.0) enables a standard PC to calculate and print out information tailored to a photographer's requirements, ranging from depth of field and hyperfocal distance tables to angles of view and the rising and setting times of the sun and moon. The new version includes an enlarging calculator and timer.

For information: Douglas Software, Sarum Lodge, Main Road, Littleton, Winchester, Hants SO22 6QS, UK, phone/fax 01962 880495.

Super 16 Prime Lenses

OpTex' Super Cine range of Super 16 prime lenses feature a large high visibility scales (T-stops for iris and dual feet/meter scale, non-rotating focus mounts where applicable) and Arriflex PL, Arriflex Bayonet or Aaton stainless steel mount options.

The first focal length available is a 5.5mm f/1.8 T2 multicoated wide angle, ideal for panoramic views, car interiors, tight environments, handheld shots, etc. Focus range is infinity to 8 inches (0.2m), angle of view is 110 degrees. It has built-in pitch focus and iris gear rings and is supplied with a sunshade. The lens accepts standard Tlffen 86mm correction filters.

Options include a lightweight sunshade with provisions for accepting three filters, one rotating 360 degrees, and French flag.

For information: OpTex, 20-26 Victoria Road, New Barnet, N. London, EN4 9PF.

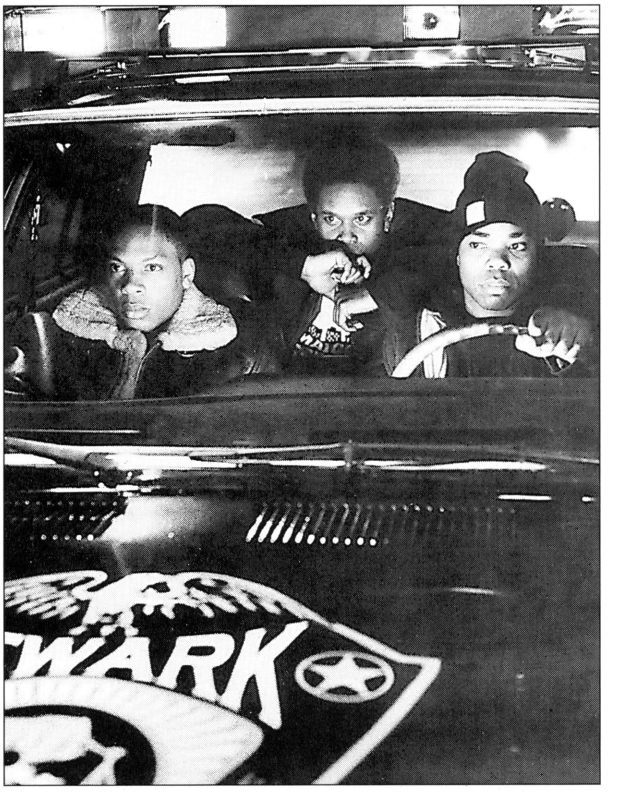
New Jersey Drive Puts Kimmel Behind the Wheel

by Brooke Comer

Adam Kimmel was a teenaged camera apprentice on *The Wanderers, Raging Bull,* and *Dressed to Kill.* Before he shot his first dramatic work, a short called *The Bet* with director Ted Demme, he'd cut his teeth as an assistant doing work on films such as *Angel Heart, Ghostbusters, After Hours,* and *Witches of Eastwick.* Between features, he shot and directed commercials and music videos for acts ranging from from LL Cool J to House of Pain. Now he's earned a reputation as an established director of photography who can choose his scripts. And he knew right away that he wanted to shoot writer/director Nick Gomez' *New Jersey Drive.*

The Gramercy Pictures' release is an explosive look at urban teenagers in Newark who steal cars for the thrill of the chase and a few dollars from the chop shop. "I'd just shot three comedies in a row," says Kimmel, "and I was attracted to the gritty, real-life quality in the script. I could see it immediately. In terms of subject matter and location, *New Jersey Drive* was totally different from anything I'd done before, and that's always an exciting situation."

Kimmel used five cameras — two Panaflexes, an Arri 3, a handheld 2C, and an Eyemo. "There was hardly a day on the shoot when three cameras weren't working simultaneously," he says. Careful planning in preproduction helped stretch the $6 million budget. "It was never enough," says Kimmel. "We had a lot of stunts and night shoots, and we had to go in knowing we couldn't shoot conventionally."



***Jason (Sharron Corley), Ritchie (Andre Moore) and Midget (Gabe Casseus) take a memorable ride in a "boosted" squad car in* New Jersey Drive.**

Although Kimmel and Gomez worked to "define a palette early on in preproduction," the director and cinematographer didn't always have the same approach to a scene. "Nick's instincts tended to be different from mine when it came to designing coverage. He likes to work spontaneously with both the actors and the camera, leaning to-

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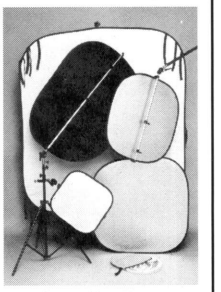

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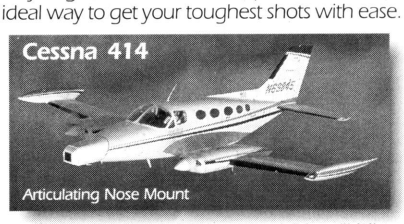

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ward less coverage and a lot of handheld work. My approach was probably more conventional, unless I felt that the energy of the scene could support that kind of shooting. I think we found a good balance and used the more kinetic camera movement very effectively when it was appropriate."

Kimmel had tested Kodak's then-new 98 stock on his previous film *The Ref*, and was impressed enough to choose it for *New Jersey Drive*. "I wanted to do a lot of dark, edgy night work and I couldn't imagine a more applicable use of this film," he says. Mike Brown, his Kodak rep, "doled out some of the first 98 to us, and we scheduled the early production around how much film we had. We only did as many night scenes as we had stock for."

The 98 stock let Kimmel light in a new way. "98 has higher contrast than 96 and is much sharper. I was working with a larger percentage of black in the frame and found that this stock could handle it better." Most of the actors in *New Jersey Drive* were African Americans, and Kimmel was able to shoot the many night scenes with very little front light and still have great detail in the shadows without them turning muddy. "We shied away from a slick approach and went for minimalism, carving out a shape with an edge of light in a black frame."

For the many action scenes filmed at night ("that's when these kids are in their element") Kimmel used color and contrast to make the night come alive; for visual separation, he made the day scenes look muted and unsaturated by shooting with 93 and pull-developing all day exteriors and interiors, overexposing a stop and underdeveloping to soften the contrast and mute the colors. "I wanted the days to look overcast, and I often find the 93 a bit saturated. It worked great for *Who's the Man?* (which he shot in 1992), but we wanted to stay away from anything but cool tones: blue, grey, green, black. We avoided reds and yellows."

Kimmel lit *Jersey Drive* with tungsten for day and night interiors and exteriors, using Maxi Brute nine-lights and Chinese lanterns but "no HMIs at all," he admits. "The biggest lights I used were 10Ks. It was a cost-efficient package, which always helps, but I've been working without HMIs for the last three films and the savings are just one of the reasons." He also tends to work without diffusion. "I used more hard light than I usually do for the actors' black skin tone. But when it is applicable I prefer to soften the light rather than the image."

Kimmel used Panavision Primo lenses, using the 40mm as his standard for two-shots. "It also became the most usable lens when shooting in cars, and I'd find myself using the 35mm for the widest shots and 75mm for close-ups, only going to the 150 and 300 for car chases. Then with the handheld camera work, I found this combination could make the transition from dolly to handheld very well."

If he has one regret about the film, it's that another director of photography was hired about six months after principal photography had finished to shoot an additional week of inserts and last-minute rewrites. "The person who shot this never contacted me to talk about the original cinematography and the footage I've seen in the rough cuts reflects this. It's an unfortunate situation, because many choices are made in designing the look of a film, and without communication even a great cinematographer would have a slim chance of keeping continuity on someone else's film."

Kimmel had researched his job by watching every car chase movie he could find. He found some of the most powerful camerawork in *French Connection* and *Bullitt*, and found that they had captured the excitement of a chase without using too many cranes or fancy angles. "In most films, the bigger the car chase, the more cuts. But the real excitement of a car chase is being in the car. Every time the camera cuts, you have a tiny sense of relief. You're no longer stuck inside. The great thing about *French Connection* and *Bullit* is that the camera doesn't leave the car for long periods. You're right there, ducking traffic."

Keeping the camera in the car kept Kimmel in the car, too. "This was a car chase movie starring city kids who'd never driven before," he says wryly. A stunt man had given the actors a driving lesson one week before production began. But strapped in the back seat of the car, with the actors at the wheel, his camera on his shoulder and his life in his hands, "was amusing," says Kimmel, "to say the least."

Books in Review

by George Turner

You Tarzan — Masculinity, Movies and Men
edited by Pat Kirkham and Janet Thumim
St. Martin's Press, 221 pps., cloth, $39.95

Male-bashing books are all the rage of late. Even if men are variously beasts or pains in the butt, they may be tired of having it hammered into their Neanderthal skulls.

The present anthology offers titles like "Rock, the Last Guy You'd Have Figured," "Clark Gable's Balls," and "What Are Big Boys Made Of?" All of them deal with masculinity (or, as the editors insist, "masculinities," because "we can no longer use the confident singular"). This time the editors are women, but — surprise! —all 14 essays are by males.

Hollywood Censored
by Gregory D. Black
Cambridge University Press, 346 pps., cloth, $27.95

Several books about that phase of movie censorship dealing with the Motion Picture Production Code and the Catholic Legion of Decency have been published recently. "Hollywood Censored" can be counted among the better ones because it is extensively researched and maintains a nice balance between the serious, the ironic and the amusing aspects. Also, it publishes a lot of previously buried material from the Legion archives.

The Motion Picture Producers and Distributors of America (MPPDA), or "Hays office," was established by industry leaders in 1922 to combat a bad public image of movie people following a series of scandals. Self-regulatory censorship soon became a function of the MPPDA but had little effect on the members. Pressure from local censors, ladies' clubs and churches led in 1930 to the adoption of a Production Code with teeth in it, drafted by Father Daniel Lord, S. J. and publisher Martin Quigley. In the Spring of 1934 the teeth were elongated enormously when it was declared that the world's millions of Catholics would boycott any pictures not okayed by the newly formed Legion of Decency. At this point the power of the censors ran completely amok, with the dread "condemned" rating being bestowed upon the likes of *Manhattan Melodrama, One More River,* and *The Informer.* Many of the demanded cuts defy belief.

The author, a professor of communications history at the University of Missouri, Kansas City, does a good job of revealing how the industry was pressured into presenting a Shirley Temple view of the world. He stresses that censorship promoted conservative political views, yet such leftish Code era pictures as *Black Fury, Our Daily Bread, Red Salute, ". . . one third of a nation," The Grapes of Wrath* and *Dead End* managed to get produced and released.

There are occasional bloops, e.g., the Fox executive was Winfield, not Wilfred, Sheehan; the writer was Aben Kandel, not Handel; Boris Karloff was not a mad scientist in *The Walking Dead,* but an ex-con framed for murder. They're not enough to do much damage to this in-depth study of the nature of roughshod censorship and its effects.

The First Century of Film
by Martin S. Quigley, Ed. D. & Associates
Quigley Publishing Co., 408 pps., cloth, $49.50

This reference book contains more than 1300 biographies representing "who was who" in the American film industry, from the world premiere of the Edison Kinetoscope on April 14, 1894 to August 1, 1994. It begins with Aaronson,

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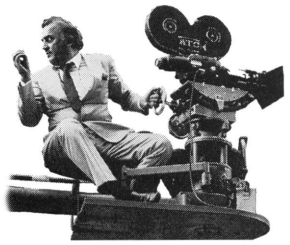

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Charles S., editor for Quigley Publications, and ends with Adolph Zukor. The names between are mostly of above-the-line personnel such as executives, distributors, producers, directors, exhibitors, and actors. To illustrate: it lists Cortez, Ricardo but not Cortez, Stanley. There are a few cinematographers represented (such as Gregg Toland, George Folsey, James Wong Howe, and several who later became directors) and some of the better-known film writers, composers, production designers, dance directors, industry publication editors (not including *American Cinematographer)*, inventors, lawyers, politicians, etc. There are 56 pages of photos.

The listings give some pertinent dates, birthplaces, etc., film debuts, and a full or representative list of credits. These are similar to the entries that have been carried in Quigley Publications' esteemed International Motion Picture Almanacs, standard reference annuals for the past 55 years. It is appropriate that this company, which has published film industry periodicals and books since 1915, should bring out this centennial book. Martin S. Quigley, son of the founder, has edited much of this invaluable material steadily since 1939, with time out for service in the OSS during World War II.

This hefty volume should find a welcome space on any film lover's reference shelf. ❧

Books in Review Preview

In upcoming issues of AC, we'll take a close look at the following new titles:

***Hispanics in Hollywood**, by Luis Reyes and Peter Rubie*

***What An Art Director Does**, by Ward Preston*

***Movie Talk from the Front Lines**, by Jerry Roberts and Steven Gaydos*

***The Women's Companion to International Film**, by Annette Kuhn and Susannah Redstone*

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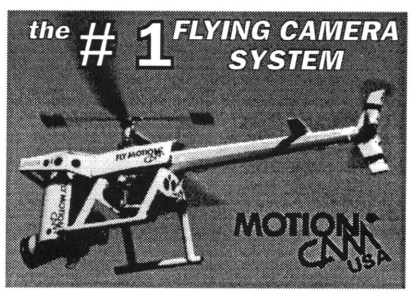

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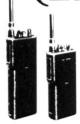

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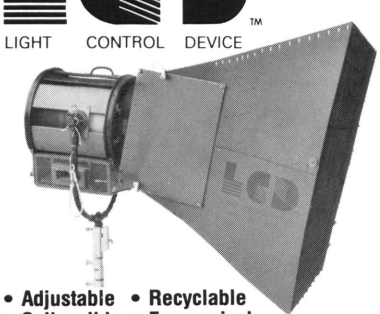

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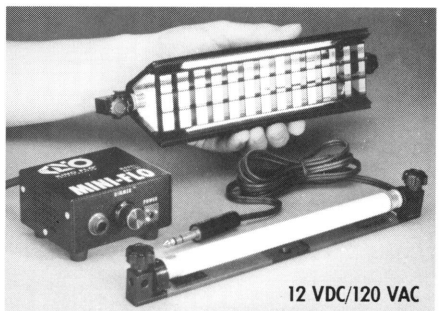

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province of humans.

Today, armed with a single fact, you can speak directly to probably more than half the population of the Earth. That fact is, of course, their phone number. One day we will have a comparable system for data — speak to it and it will speak back to you. Imagine a world in which voice-activated computers answer any question you ask. "Can you show me what the lower-right quadrant of the image looks like?" "How would the puddles look if the street lights were amber instead of white?" "How could the color of the actor's shirt change if the sunlight were diffused by cloud cover?" Each of these questions will be as easy as "Open the pod bay doors, Hal."

As that capability grows, not just in cinematography, but in every activity in our economy, the people who prosper will no longer be those who gather and manipulate information, but those who know what to do once that data is presented to them. We will be overloaded by data, and the people who succeed will be those who know how to triage the flow and create something from it, rather than those who add to the clutter. The system will reward intuition, creativity, and subjectivity — right-brained stuff.

There is a certain gleeful irony in this. The power of information technology is automating the analytic, data-manipulation left half of brains. This improves the market power of the complementary and creative right side. No less a seer than Timothy Leary agrees, stating, "Computers will replace you only to the extent that you think like a bureaucrat, a functionary, a manager, an unquestioning member of a large organization, or a chess player."

And so, the ultimate irony is that the Information Revolution may ultimately reward the artists, poets, and philosophers. Their triumph has been long overdue. And so, perhaps, has that of the cinematographers. ☙

From the Clubhouse

James Bagdonas, Roger Deakins and George La Fountaine are the ASC's three newest active members. Bagdonas' credits include the series *Lois and Clark: The New Adventures of Superman, Time Well Spent* (pilot), *Renegade*, and 44 episodes of *Hunter*. Other credits are the Movie of the Week *Deader Than Ever*, the feature *American Heart*, which earned him an Independent Spirit Award nomination for best cinematography; the TNT feature *Conagher*, and commercials for Nike and New York Bell Telephone. He has also directed several episodes of *Lois and Clark*, *Renegades*, and *Silk Stalkings*. His work on *Hunter* earned him a 1990 ASC Award and a 1990 Bronze Medal at the New York Film Festival.

Roger Deakins' interest in film grew from his work as a still photographer in his native England, where one of his commissions was to record the passing way of life in rural Devon. He earned a place at the National Film School and spent three years there filming documentaries and other students' films. Professionally, he started out as a documentarian, and completed *Around the World with Ridgeway*, about the Round the World yacht race (for which he spent nine months sailing); *Zimbabwe* and *Eritrea — Behind the Lines*, about the wars in those countries; *Rag Gonds — India* and *S.E. Nuba — Sudan*, two anthropological documentaries; and *When the World Changed*, following the lives of four mental patients and their re-entry into society.

This work led to offers for television dramas and later for features, the first of which were *Another Time, Another Place* and *1984*. Since then his resumé has grown to include *The Innocent, Defense of the Realm, Sid & Nancy, Stormy Monday, White Mischief, Mountains of the Moon, The Long Walk Home, Air America, Barton Fink, Passion Fish, Thunderheart, The Hudsucker Proxy, The Secret Garden*, and *The Shawshank Redemption*.

George La Fountaine graduated from the Pasadena Playhouse in 1958 with a playwrighting major, and was then employed by Paramount/KTLA to work in live television, news, documentaries, commercials, and regular programming such as wrestling, auto races, boxing and roller derby. He left KTLA in 1963 to work as a freelance director of photography and lighting director. By 1968 he had his own consulting firm with clients that included Disney, the NFL, various political candidates, Ford, and KCET.

In 1972 he left the business for six years and published six books — *Two-Minute Warning, Flashpoint, The Scott-Dunlap Ring, The Killing Seed, The Long Walk*, and *Alumni*. He spent the years from 1978 to 1988 as a director of photography at MTM productions, working on *Newhart, Eisenhower & Lutz, WKRP in Cincinnati*, and numerous pilots. In 1988 he performed high-definition tests for Sony/CBS evaluating various film stocks against high-resolution electronic images.

☙ ☙ ☙

Richard Glouner, ASC and frequent collaborator Pasquale Moscatello conducted a workshop on directing camera, actors and scene at the University of Colorado in early December. The cinematographer and writer/director worked with the class to light, stage, rehearse and shoot specifically scripted scenes on a local sound stage. The workshop was the second part of a series on using the camera as a director's tool, put on by the Rocky Mountain Filmmakers Association in conjunction with the University. ☙

Virtual Companies, Walled Cities, and the Right-Brained Economy: Cinematographers on the Information Highway

by Everett M. Ehrlich,
Under Secretary for Economic Affairs,
U.S. Department of Commerce

The computing and telecommunications capabilities that are creating the Information Highway are more than "technology," just as Watt's steam engine was more than merely a "machine." The new information-processing "technologies" will create new goods, services, and jobs, and will ultimately raise living standards. In short, they will change the way we work and live. This article talks about how and what those changes might mean for cinematographers.

The first of the changes concerns our companies. Throughout most of this century, our companies grew in size — big automobile companies, big computer companies, big film studios — because big companies could coordinate their activities better through their internal structure than a bunch of smaller companies could through the market.

But that was then. Today, ever more powerful computing and telecommunications networks allow wholly separate firms to operate as if they are part of one organization. Economists (and I confess to being one) call these "virtual companies," constellations of companies that come together to produce as if they are one, only to resume their separate existences after the fact.

In this sense, our firms are coming to do business as if they were cinematographers — economic free agents who bring their skills to the point of demand at precisely the moment they're needed. Studios now assemble such virtual companies to produce individual films, partly to produce efficiently and to tailor the resources at hand to the needs of the moment, and perhaps to manage subsequent claims. But it also follows, for example, that if you can bring companies together into virtual companies, then each one is going to have to be the best at what it does.

The Information Highway, therefore, is going to pressure large organizations everywhere to break themselves down and focus on what they do best. Size alone is no longer a sustainable competitive advantage — skill is. You're either best, or one of the rest. One implication of this trend is that the long-presumed marriage between production studios and distribution channels need not be inevitable. After all, it's hard enough to be good at one, let alone best at both. Markets may end up producing entertainment product and getting it to the consumer better than mergers will.

> "Computers will replace you only to the extent that you think like a bureaucrat, a functionary, a manager, an unquestioning member of a large organization, or a chess player."
>
> — Timothy Leary

A second and more obvious phenomenon is that being in the world means being on the Highway. The Highway is the walled city of a new millennium, allowing those on the inside to engage in commerce together and those on the outside only to watch. You can only be part of a virtual company if you're on the Highway and know how to use the technology that brings the components of virtual companies together.

One implication, of course, is simply to get inside. That means knowing how to use computing and telecommunications networks. It is only a matter of time, for example, before electronic bulletin-board-type media match cinematographers with work, as they will do for almost all occupations, however advanced. Digital portfolios will allow a cinematographer to send a sampling of her or his work to any location on the globe electronically.

And, once you're in the walled city, there are exciting new opportunities if you have the inventiveness to find them. Consider this example: successful retailers used to think that their "skill" was having goods on hand to serve their customers, but once they started to analyze computerized databases of their sales, they recognized that their real ability was knowing what customers wanted. In other words, new technology allowed them to redefine their skills.

Cinematographers, take note! Is your real skill managing camera equipment to achieve a certain outcome, or is it a more general understanding of how light adds to a story or emotional experience? The difference is an important one, because computerized imaging will make the first skill obsolete and the second skill even more valuable. Technology, therefore, will allow cinematographers to redefine their skills — if they use it well.

A third trend worth noting is what I call the right-brained economy. The rush of science and technology in the two centuries of the Industrial Revolution has favored the left-brained aspect of our capabilities — rationalism, empiricism, and analytic deft. But as our computing machines gain power and functionality, their ability to gather and analyze data will increase by orders of magnitude, in essence automating the left-brained

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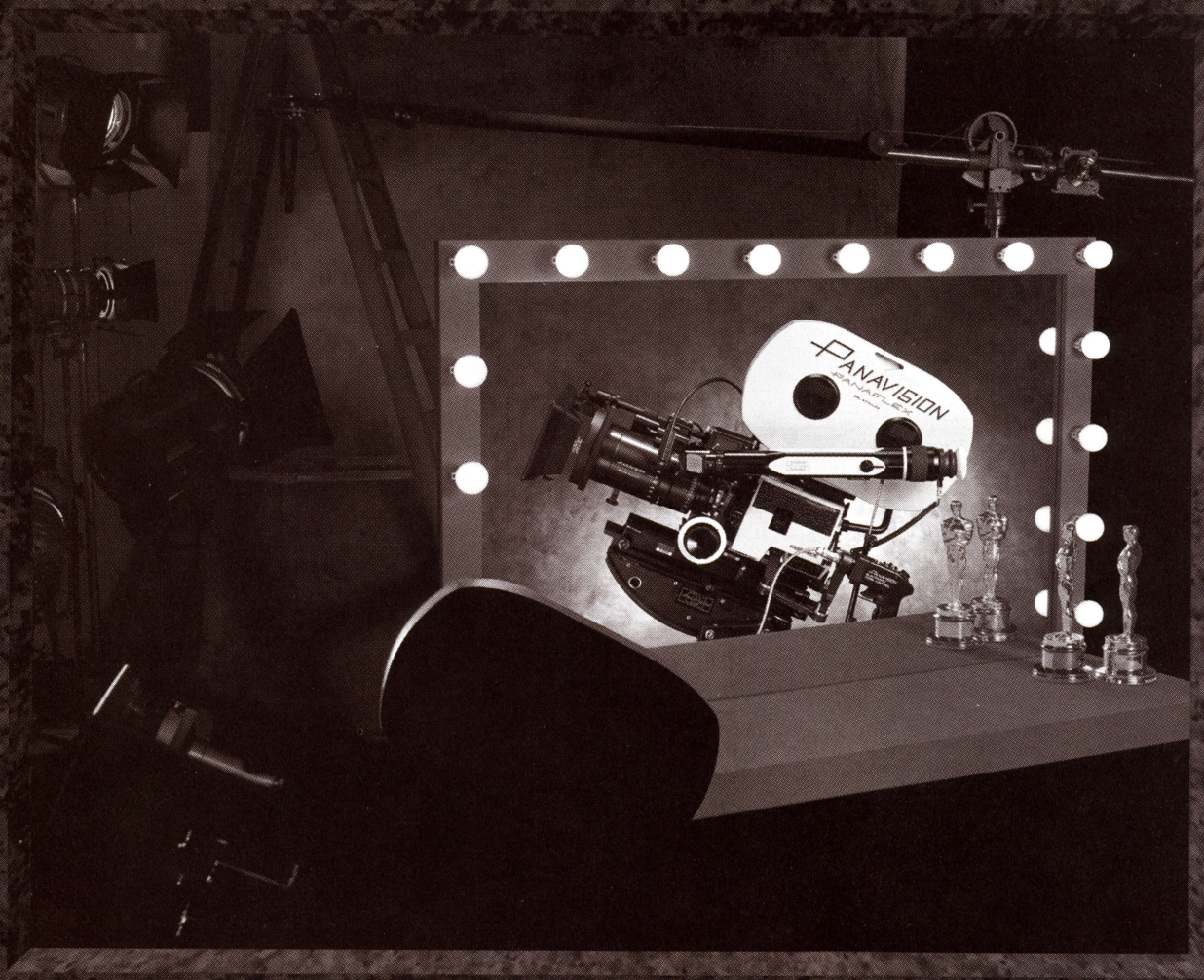

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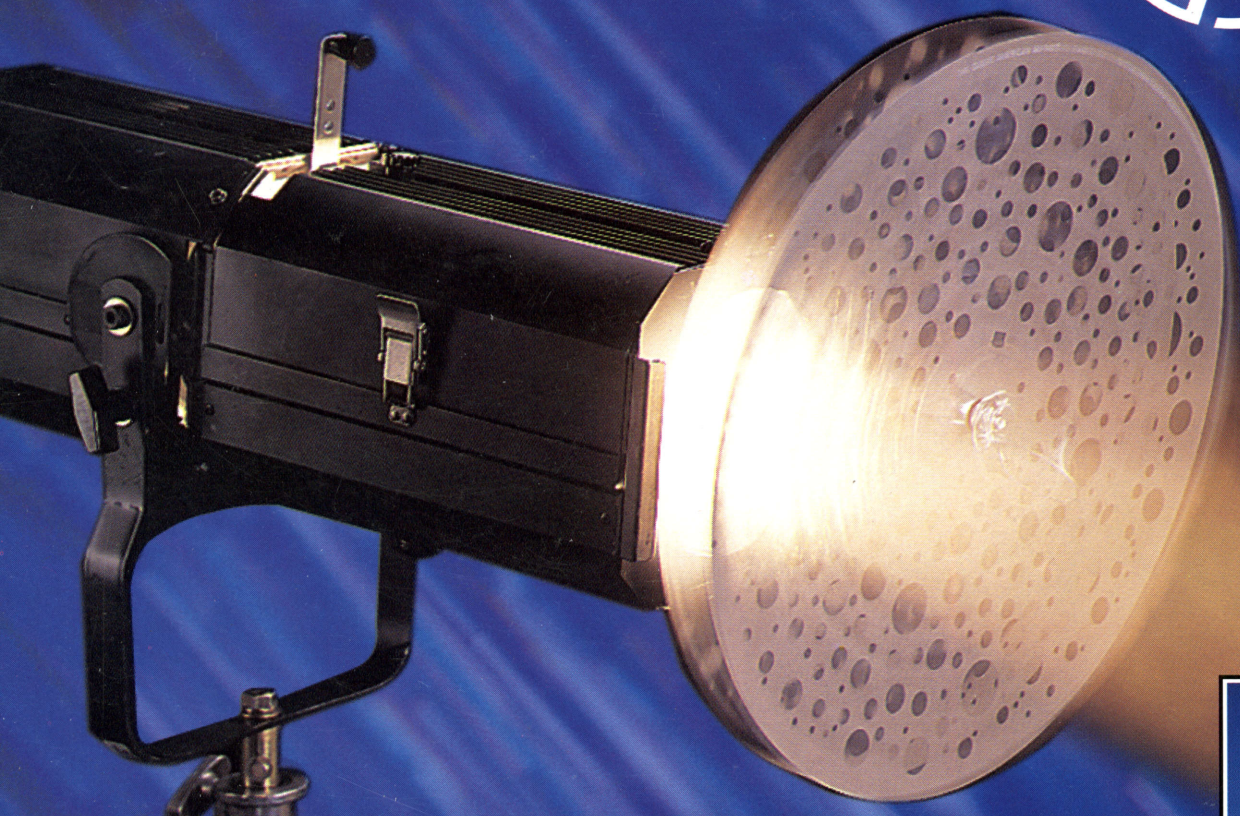

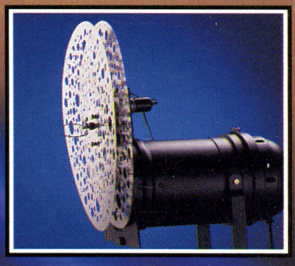

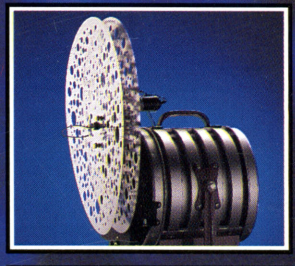

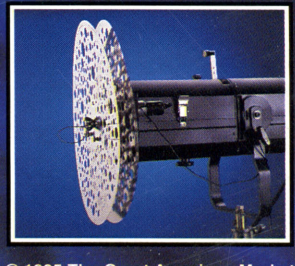

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